

THE ROLE OF METACOGNITIVE STRATEGY USE
IN SECOND GRADE STUDENTS WITH LEARNING DISABILITIES
DURING WRITTEN SPELLING TASKS

A DISSERTATION SUBMITTED TO THE GRADUATE SCHOOL
IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE
DOCTOR OF EDUCATION

BY

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MUNCIE, INDIANA

JULY, 2010

ABSTRACT

General education and special education teachers are expected to provide evidence-based instruction to all students in the classroom. Along with that, they must make sure that their students pass the state mandated tests based on state standards. Meeting the needs of everyone in the classroom is a difficult task especially with 10-20% of those students having special learning needs that require a different approach to assessment and instruction.

The purpose of this study was to investigate the role that metacognitive strategies have in second grade students with learning disabilities while they are performing written spelling lists and story generation tasks. One-on-one interviews were conducted with two second grade students with learning disabilities after they had written ten word spelling lists as well as a story based on a photograph of their choice. The interviews were conducted to identify what metacognitive processes they used by asking them to report and reflect on what they wrote, how they knew what to write, and whether or not they could identify what they wrote was correct, as well as being able to independently correct any errors they made.

The results indicate that although their metacognitive strategies were emerging, they had difficulty reporting consistently and accurately what spelling strategies they used. They also had difficulty reflecting on whether a word was correct or incorrect and if incorrect, how to correct it. Each student used a different approach to spelling a word, one "Brute Force" and the other "Rule-based." Neither of these approaches worked

effectively for these students as they made many spelling errors and still had difficulty correcting them.

The overall findings indicate that these two second grade students with learning disabilities used limited metacognitive strategies of monitoring, regulating and reflecting. What strategies they did employ, were not consistent or effective to help them achieve a level of spelling efficiency needed to be successful in second grade.

DEDICATION

To Jim

*Who was my constant traveling companion
on this journey. Your tireless physical, mental,
emotional, and spiritual support sustained and refreshed me.*

*Although this journey has come to an end,
the next one is just around the bend.*

Thank you, my love.

ACKNOWLEDGEMENTS

I would like to thank Dr. Nina Yssel, the Chair of my committee, for her unwavering persistence to keep moving forward and improving this product called my dissertation. The giving of your time and your support meant so much more to me than you will know. Thank you for mentoring me as a student, a professor and as a grandparent.

I would also like to thank Dr. Linda Martin who tirelessly gave of her time to teach me all that she knew about reading and metacognition. I owe my love of learning about reading to her. To Dr. Harvey who taught me about policy and law and helped me learn to realize the importance of knowing that in order to be an advocate for children with special needs. And finally to Dr. Scheib, thank you for your support of this qualitative project. I have learned to love this research method and have improved my knowledge because of you.

Thank you Adam and Kerileng for always being ahead of me and leading the way in this journey. You have answered my tireless questions and I thank you for that. Thank you to Susan who encouraged me to begin this journey. So often I have recalled those beginnings and was grateful for your prompting.

Finally, to my children and grandchild, Alison, Kyle, Alexa, Nate, Shanna and Jamee, you have all encouraged me in your own ways to persevere. The very thought of you sustained me through the weary times and the times spent with you refreshed me. You all got less of me during this long journey and I am grateful that you never complained. I love you all.

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CHAPTER ONE

Introduction

“A child will not be expected to succeed in life if he doesn’t have the opportunity of an education. It is a right that must be available to all on equal terms.”

Chief Justice Earl Warren in *Brown vs. Board of Education* (1954)

Historical Context

On any school day in America, we find a typical classroom filled with a group of diverse students. Included in that spectrum are typical learners, those with high ability skills, as well as students who find school challenging on a daily basis. The general education teacher must meet the needs of all of these students at the same time in the same school day. Students with special needs have been included in the public school setting since the congressional enactment of P.L. 94-142, Education for All Handicapped Children Act (EHA) in 1975. This legislation gave rights to students with special needs to be afforded a Free Appropriate Public Education (FAPE), bringing some two million additional students into the schools who previously had not received services. There were an additional three million students who were already attending school but not receiving the appropriate education that they needed (Yell, 2006). The original population served

by special education was largely confined to those with vision or hearing impairments and then those who were considered “mentally retarded.” Many of these programs were curtailed when the Great Depression hit the United States in 1929 (Osborne & Russo, 2006).

A great deal of progress has been made in the field of special education since the early days of exclusion and the 30 plus years since the first legal mandate for all students to be allowed to enter public schools and receive a FAPE. Even after the landmark legislation in 1975, schools struggled to know how to best educate these students with special needs as well as how to train teachers to work with this specialized population (Bartlett, Etscheidt & Weisenstein, 2007).

Subsequent to the initial legislation, there have been numerous reauthorizations of the EHA: in 1983, 1986, 1990, 1997. More current reauthorization became known as the Individuals with Disabilities Education Act (IDEA) in the 1990 reauthorization and is now known as the Individuals with Disabilities Education Improvement Act (IDEIA) of 2004. These amendments have continued to protect the rights of students with disabilities as well as provide funding to state education agencies. Since the original legislation, students with special needs have been moved from separate classrooms, to mainstreaming. Mainstreaming was the practice of placing students with special needs into general education classrooms for part of the day. The movement which we now experience is called full inclusion. With this concept came the idea that every student with special needs should be placed within the general education classroom. The classroom inclusion movement has created new challenges for general education teachers as they try to teach to a range of diverse learners who all need access to the general

education curriculum. That challenge also includes the task of adapting the curriculum to meet the needs of exceptional learners as well as being knowledgeable about how to best teach those with special learning needs (Bartlett et al., 2007).

IDEA of 1997 clarified the term, special education, by stating that instruction must be specially designed, and free to parents in order to meet the exceptional learning needs of a student with a disability, including instruction conducted in the classroom, in the home, in hospitals and institutions, and in other academic settings where the student may participate and require access to the general education curriculum (20 U.S.C. § 1401 (25)). IDEA of 1997 also emphasized the need for Individualized Education Programs (IEPs) to contain measurable annual goals and that those goals be monitored and met annually (McCray-Sorrells, Reith, & Sindelar, 2004). This meant a movement toward a standards-based approach for all students, not just those in general education. This amendment went beyond access to the general education curriculum to the beginning of the accountability movement for ensuring success for every student. The No Child Left Behind Act (NCLB) of 2001 would later initiate and reinforce these issues with state-mandated testing requirements for all students.

The NCLB school reform movement has attempted to improve the condition of education in the United States for students with and without disabilities by making schools accountable for the performance of every student by raising the stakes for all students to achieve proficiency in math and reading by the 2013-2014 school year. IDEA (2004) merged common goals with NCLB in the areas of school accountability for all students, including those with disabilities, as measured by state achievement tests for students in grades 3 through 8 in reading/language arts, math, and science (Bartlett, et.al.,

2007). The intention of NCLB was to raise the achievement level of all students, however, there was no provision for students with special needs to be excluded from the rigorous testing standards created by this legislation, other than the 1% of the student population who would not be required to participate in state mandated tests. This created difficult issues for general education teachers who needed to teach grade level material to students who may not be at that instructional level. The state mandated tests are assessing students at their grade level rather than their instructional level. Ysseldyke et al. (2004) concluded that high stakes testing has some positive aspects for students with special needs such as improved use of instruction and data for making decisions. However, there is a lack of data that would show the results of high stakes testing upon students as well as the long-term effects on schools who fail to meet those test score mandates.

Within the general education classroom setting, one of the most difficult tasks for early primary teachers is be able to ascertain the reading and writing development of all of their students. With so much time allotted for instruction, there is limited time set aside for assessment of student's metacognitive skills in the area of writing.

The focus of this study is on students' ability to monitor and spell words while writing. The acquisition of writing and spelling does not come naturally for every student (Gentry, 1987). Reading and writing require one to reflect and self-regulate while spelling words (Graham & Harris, 2000). The purpose of this study is to examine how second grade students with learning disabilities think about words and use metacognitive strategies to spell words during different writing activities. One of the assumptions addressed in this study is that students with learning disabilities do not reflect upon, or use metacognitive approaches to monitor the spelling of words while writing. If these

strategies are absent, do they self-monitor, and what do they use to self-monitor and regulate their spelling activities?

Development of Metacognition Theory

The term metacognition as it relates to literacy has evolved over the last three decades. It first became known when Piaget's research led him to describe children's cognitive development in terms of the concept of egocentricity. He believed that children were not aware of their own or others' perspectives. He also thought that it would eventually develop into "acquiring a skill in discriminating their own from other people's" (Flavell, 1999, p. 22).

Flavell (1979) was the first to suggest the term metacognition as a new area of investigation. He thought children were capable at some level of monitoring their thought processes while communicating information, reading, writing, learning language as well as for memory and attention. Flavell introduced us to the idea of metacognitive strategies through a term he labeled "cognitive monitoring." Cognitive monitoring in Flavell's theory, incorporated the "thinking about thinking" through four processes: metacognitive knowledge, metacognitive experiences, goals, and strategies. He also considered that metacognitive knowledge and experiences were two separate entities. Three waves of theory have dominated the area of cognitive development. Piaget first wrote about children's cognitive development in terms of egocentricity; the second wave of theory began with Flavell's ideas about how students develop metacognition and thirdly, the theory-of-mind development began in the 1980s and now dominates the literature on cognitive development (Flavell, 1999).

The current theoretical premise, theory-of-mind, investigates what students know about their “basic mental states – desires, percepts, beliefs, knowledge, thought, intentions, feelings and so on” (Flavell, 1999, p. 23). This theory looks at how students connect these mental states to their behavioral output and if the mental state and behavior demonstrate congruence, or if there is a false belief or a misunderstanding of the situation.

Metacognition was first considered to be a later developing skill. Scholars such as Flavell (1979) believed that young children struggle to use metacognition. He reported that students in Kindergarten and elementary school thought they could remember items when they really could not. However, Kuhn (2000) suggested that metacognition appears early and continues to be developed as the learner gains literacy skill. Children as young as three years old begin to develop a sense of what they know as well as how they came to know that information. Baker (2005) also reported that there appears to be evidence that children as young as 4 years can use metacognition under structured conditions. She argued that students had not been given the chance to develop strategies where they can access and use these metacognitive processes (in Israel et al., 2005)

More research has examined metacognition in relation to reading comprehension rather than the spelling processes. There has not been ample research that has focused on the abilities of second grade students and their metacognitive use of spelling strategies; but in general, more investigations have been conducted with older students and adults (Darch, Kim, Johnson & James, 2000).

Metacognition and Literacy

Baker and Brown (1984) expanded upon Flavell's conceptual theory and discussed the relationship between metacognition and literacy and in particular, reading. In other words, what students bring to a literacy experience and what they think about the experience during the situation, how they monitor it, and repair it will dictate how they monitor and regulate their understanding during the literacy experience. They further noted that regulation of cognition through the use of strategies, helps individuals to control their cognitive efforts. From a social constructivist perspective, Vygotsky (1978) asserted that children gradually gain control over their metacognitive processes after interacting with others and moving from others regulating for them to self-regulation. He also thought that students move from dependence of their cognitive energy from others to being independent with their own cognitive processes.

The Relationship of Spelling to Writing

Researchers have related the development of spelling to the fields of reading. Spelling instruction and spelling research has not enjoyed the focus that reading and reading instruction has shared. The "ABC method" which was a way to teach reading and spelling was taught for more than 200 years with letters and letter names being introduced first (Frith, 1980, p. 11). Noah Webster stated that spelling was the foundation of reading because students were not ready to understand the meaning of words when first attempting instruction. Spelling instruction then was in decline in the second half of the 20th Century. Public schools showed limited enthusiasm for the intense development of spelling or spelling practices that had existed in the first 200 years of its inception (Venezky, as cited in Frith, 1980).

There were further connections in the relationship between reading and spelling. Chomsky (1979) thought that spelling could provide evidence to how students read words. She thought spelling gave an idea of how students represented words lexically, for students who used invented spelling, or spelled words according to the way they sound.

Ehri (2000) reported that there are two types of spelling acts: writing of words and being able to recognize whether words are spelled correctly when they are read. These two separate acts are necessary to produce correctly spelled words, as well as monitoring and regulating the spelling of words especially for those students with learning disabilities.

There is evidence that poor readers are usually poor spellers and usually follow a different course when learning to spell. They rely more heavily on visual matching and phonological position rules rather than sound-symbol associations (Ehri, 2000). The rate of spelling growth in students with learning disabilities appears to follow a developmental approach (Worthy & Invernizzi, 1990).

Cognitive Processes in Spelling

It appears that the cognitive processes used in spelling practices are similar to those used in reading (Ehri, 2000). Reading and writing involve similar processes as both use the concepts of awareness and control to accomplish the tasks. However, students must use them intentionally and independently in planning, monitoring, and revising in order to produce an effective written product (Baker & Brown, 1984).

Very little has been done to study the metacognitive efforts of students with learning disabilities, particularly those with spelling difficulties. There is evidence that students with learning disabilities have difficulty with the process of phoneme-grapheme

correspondence and are less effective at using strategies than typical learners. (Bailet & Lyon, 1985). Further, Darch et al., (2000) found that first grade students with learning disabilities failed to use systematic spelling strategies when attempting word spelling and writing assignments. Students with learning disabilities appear to have spelling challenges as a result of strategy deficits rather than cognitive deficits (Darch, Eaves, Crowe, Simmons & Conniff, 2006). More exploration remains to be done in this metacognitive area to determine if young students use strategies while attempting written spelling tasks.

Statement of the Problem

Strategy use and development help students young and old to make connections for recalling and delving deeper into more difficult material. Wong (1986) advocated that teachers instruct students to use “self-monitoring, planfulness, self-checking, and self-evaluation” (p. 10). Most students with learning disabilities, approximately 80%, have difficulty with reading (Lerner, 1989). Along with the challenge in reading, spelling problems for students with learning disabilities are common and appear to be very difficult to remediate, especially if left untreated (Gerber & Hall, 1987). Numerous studies have been conducted looking at strategy use with high school students and adults with learning disabilities. It is well documented in research that older students benefit from and use strategies to help them to read and write; however, the documentation of cognitive strategy use for younger students, particularly primary elementary grade levels, is sparse (Darch & Simpson, 1990, Darch et. al., 2000). To date, it has been suggested by Darch et al. (2006) that spelling difficulties for students with learning disabilities “may be a result of strategy deficits rather than cognitive deficits” (p. 2). More studies have been

done with regard to intervention approaches that teach strategy use, however, the evidence is lacking with regard to investigating the metacognitive skills younger primary students use when determining the correct spelling of words in spelling lists and during written narrative tasks (Darch et al., 2000).

The purpose of this study was to investigate the early primary grade population, namely second graders with learning disabilities, and attempt to determine if they use metacognitive strategies and if so, just what metacognitive strategies as well as spelling strategies they employ during written spelling tasks, namely, spelling lists and a self-generated story.

Research Questions

In order to investigate the metacognitive strategies that second grade students with learning disabilities use, the following research questions were addressed in this study. They include:

1. Are second grade students with learning disabilities able to reflect on and report the strategies they use during written spelling tasks?
2. What types of strategies do second grade students with learning disabilities use when spelling words while writing a story?
3. What types of strategies do second grade students with learning disabilities use when writing a spelling list?

Definition of Terms

The following definitions used in this study are supplied for clarification purposes.

Deficits - an area of limitation that a student experiences in an academic area (Smith, 2007).

Inclusion – the practice of putting students with special needs, regardless of the level of their disability, into the general education classroom with appropriate academic supports related to their disability (Lerner & Kline, 2006).

Mainstreaming – placing students with special needs into the general education classroom for some part of the school day. This practice was a precursor to inclusion (Mastropieri & Scruggs, 2007).

Metacognition - the process of monitoring and evaluating what one thinks about reading and writing through metacognitive knowledge and metacognitive experiences (Flavell, 1979).

Metacognitive Awareness – The act of being aware of what processes one uses as well as what processes are actually employed to be able to aid in reading or writing activities (Bauserman, 2005).

Orthographic knowledge – gaining an understanding of the system of sounds represented by letters when put in sequences, and form words that represent meaning (Bear, Invernizzi, Templeton & Johnston, 2004).

Phonemic Awareness – the ability to discriminate between phonemes (individual speech sounds) of the language system in individual words (Adams, 1990).

Self-Monitoring – In the area of literacy this refers to the ability to check and correct reading behaviors such as whether or not a reader understands the material he is reading (Clay, 1991).

Self-Regulation – often confused with self-monitoring, but involves the planning for the next step, monitoring whether the action was effective, testing it, revising and evaluating the outcomes during literacy activities (Baker & Brown, 1984).

Self-Reporting – the process of thinking aloud while reading or writing which may reveal how the student monitors, plans and resolves any conflicts with the written material (Pressley & Afflerbach, 1995).

Specific Learning disability -

“a disorder in one or more of the basic psychological processes involved in understanding or in using language, spoken or written, that may manifest itself in imperfect ability to listen, think, speak, read, write, spell, or to do mathematical calculations, including conditions such as perceptual disabilities, brain injury, minimal brain dysfunction, dyslexia, and developmental aphasia. The term does not include learning problems that are the result of visual, hearing, or motor disabilities; of mental retardation, of emotional disturbance; or of environmental, cultural, or economic disadvantage” United States Code (20 U.S.C. §1401 [30]).

Spelling – the act of writing a word or the written product of a word (Ehri, 2000).

Strategies – the way students systematically devise a plan to attack a problem or situation that needs to be answered or to reach a goal (Vaidya, 1999).

Typical Learners - those students who are not identified as having a disability (Smith, 2007).

Significance of the Study

Serving students with special needs has been on the national agenda since the inception of P.L. 94-142 in 1975 which gave the right to all students with disabilities to receive a free and appropriate public education. Within the special education framework of this study, research has been conducted across topics that include students' use of reading comprehension strategies, decoding, phonemic awareness, fluency, vocabulary, writing skills and Response to Intervention. Research has focused on assessment of these areas as well as interventions for students with learning disabilities in these language arts areas. However, research in the area of what students actually bring to the written spelling tasks in terms of their metacognitive process and strategy use has been limited (Darch et al., 2000; Griffith & Ruan, 2005).

For this study, the question of whether second grade students with learning disabilities use metacognitive strategies during written spelling tasks will be investigated. In seeking to find the answer to that question, we will begin to understand the differences between students with learning disabilities and typical learners. It is thought that in order to provide instructional assistance for the differences, it would be imperative to understand at what level students use metacognition while performing written spelling tasks.

Basic Assumptions

The basic assumptions of this study were that students with learning disabilities in second grade do not use, or use fewer metacognitive strategies for spelling than typical learners. Some researchers have suggested that they use strategies, but that they are different and not as effective as those used by typical learners (Berninger et al., 1998).

Also, students with a learning disability from literacy rich backgrounds may bring more prior knowledge to the reading and writing process and thus will use more effective metacognitive strategies.

Limitations of the Study

In order to examine students' strategy use in depth, a small sample of students with learning disabilities in second grade was the focus. The research design was a qualitative case study with a sample size of two students. This study did not attempt to make transferability to the larger population, but was an impetus to further examine the need for spelling strategy instruction for students with learning disabilities in the primary grades. Other limitations include the use of just one note taker during the interviews; however, the data generated were examined by the primary researcher and a Reading professor who both coded the data and looked for patterns in behavior. The research design, a qualitative case study, allowed the two subjects to be studied more in depth than a larger number of subjects. Information gathered for the study was used to analyze metacognitive spelling patterns of second grade students with learning disabilities.

Summary

Research by Darch et al. (2000) suggested that students with learning disabilities have a lack of metacognitive spelling strategies available for their use. Possible reasons for the absence of those strategies include: lack of instruction, lack of strategic instruction, or possible cognitive deficits. Research has been conducted on teaching students with learning disabilities how to use rule-based spelling strategies, but little has been done to investigate their "thinking about thinking" strategies and perhaps what the deeper conceptual level of concern may be within this population (Darch & Simpson,

1990). Much is known about strategy instruction for students with learning disabilities, however, how effective it is remains an area of exploration. Why students think that their strategies are effective is an important issue. As educators continually search for the best strategies to help students become efficient and independent spellers, it will be imperative to find strategies that students will use and recall so that they can become independent lifelong learners.

CHAPTER TWO

Review of the Literature

Historical Background

“Spelling is the foundation of reading and the greatest ornament of writing.” (Webster, 1783, cited in Frith, 1980).

The review of literature for this study is established in six distinct areas: (a) metacognitive development (b) metacognition and learning disabilities (c) spelling development in good and poor spellers (d) spelling and learning disabilities (e) spelling and metacognition and (f) metacognitive spelling strategies and learning disabilities. This chapter will concentrate on those areas to ensure that a thorough knowledge of the major topic of this study is grounded in historical and contemporary research. The historical perspective of special education through the contemporary issues that have shaped the placement of students with special needs in the general education classroom will also be discussed. Research was explored in the greater areas of spelling and metacognition and spelling and learning disabilities, and whether students with learning disabilities use metacognitive strategies when spelling or whether those strategies are absent.

The literature review for this chapter included multiple sources available to the researcher such as Ball State University CardCat system, Academic Search Premier, IDEA and Council for Exceptional Children websites. Search engines such as Google and Yahoo were also utilized as well as numerous professors' personal professional libraries.

Historical Context

One of the most difficult tasks facing a general education teacher today is how to construct his or her teaching to reach the diverse group of students in the classroom. Particularly challenging, is designing instruction to meet the needs of students with learning disabilities. Historically, students with special needs had been excluded from public education. Prior to 1975 and the enactment of Public Law 94-142, the Education for All Handicapped Children Act (EHA), millions of students with disabilities did not receive needed services in the public schools. Any special education that was available, was only there for those who could afford to pay for it. The alternative was placement in a public institution (Mastropieri & Scruggs, 2007). After endless lawsuits by parents citing civil rights as an impetus for change, legislation that would ensure a free and appropriate public education for all children was finally signed into law. After the passage of P.L. 94-142, the Education for All Handicapped Children Act in 1975, students received the right to a free and appropriate public education in the least restrictive environment (LRE). The LRE has taken years to materialize. However, the placement of students with disabilities into the general education classroom has been at the heart of special education legislation and is currently called the inclusion movement (Smith, 2007).

The reauthorization of P.L. 94-142 (1975) that special education abides by today is the Individuals with Disabilities Education Improvement Act (IDEIA) of 2004. Since 1975, there have been reauthorizations in 1983, 1986, and 1990 when it was renamed as IDEA, and then in 1997. Each reauthorization has provided more protections for students with special needs, as well as their parents, and more access to the general education classroom. Under IDEA 2004, more specifications about inclusion are noted and school districts are required to follow the least restrictive environment requirement by placing more and more students with special needs in general education classrooms to sit alongside their typical peers. Smith (2007) stated that the majority of students with disabilities spend at least 40% of the school day being educated by general education teachers in the general education classroom. “Over half of students with special needs spend at least 80% of their school day in the general education classroom” (p. 34).

According to the U.S. Department of Education, approximately 4.3% of all school-age children are classified as having learning disabilities (Mastropieri & Scruggs, 2007).

A specific learning disability is defined by the U.S. federal government as:

(10) Specific learning disability. (i) General. Specific learning disability means a disorder in one or more of the basic psychological processes involved in understanding or in using language, spoken or written, that may manifest itself in the imperfect ability to listen, think, speak, read, write, spell, or to do mathematical calculations, including conditions such as perceptual disabilities, brain injury, minimal brain dysfunction, dyslexia, and developmental aphasia.

(ii) Disorders not included. Specific learning disability does not include learning problems that are primarily the result of visual, hearing, or motor disabilities, of mental retardation, of emotional disturbance, or of environmental, cultural, or economic disadvantage (2009).

The current status of special education in the United States reveals that the majority of students with high incidence disabilities, such as those with learning disabilities, are increasingly being educated in the general education classroom (Smith, 2007). Since IDEA of 2004 and the No Child Left Behind Act (NCLB) of 2001 have merged their priorities, the major outcome of this shift has been in terms of accountability for all students, regardless of disability. These accountability measures include state-mandated testing, the use of scientifically-based instruction as well as the mandate for highly qualified teachers for all students (Skrtic, Harris & Shriner, 2005).

It is also known that students with learning disabilities need more intensive, systematic and explicit instruction in order to perform the academic activities of typical learners (Darch & Simpson, 1990). As the need increases to serve students with special needs in the general education classroom as a result of the inclusion movement, teachers will need to be aware of the thinking processes of their students with special needs in order to design appropriate instruction for their learning styles. There must also be a way for students with learning disabilities to use and monitor strategy use for learning, retaining, and expressing their thoughts through writing.

The next section will examine the historical roots as well as contemporary thinking about metacognition to help determine how and when students “think about thinking” as part of their long-term cognitive development.

Metacognitive Development

Metacognition is defined as “the awareness of how one thinks and the monitoring of one’s own thinking as well as an awareness of whether one knows something” (CEC, 2009, p. 3; Samuels, Ediger, Willcut, & Plumbo, 2007). Metacognitive development

evolved from the field of cognitive development or “knowledge about the mind” (Flavell, 1999, p. 24) and refers to “the knowledge about the nature of people as cognizers, about the nature of different cognitive tasks, and about possible strategies that can be applied to the solution of different tasks” (Flavell, 1999, p. 22).

Flavell (1979) presented a model of cognitive monitoring that incorporated the “thinking about thinking” concept through four processes: metacognitive knowledge, metacognitive experiences, goals and strategies. Flavell believed “world knowledge” relates to people with their own actions and experiences (p. 906). Metacognitive experiences relate to knowing or not knowing what has been said by another person or understanding of a situation. Goals relate to the end product of the cognitive experience and finally strategies that are used to achieve the metacognitive goals (Flavell, 1979).

Piaget was the first to introduce the concept of cognitive strategy development in young children. The Piagetian view placed more emphasis on predetermined stages of behavior that children needed to pass through before they could gain and retain information and establish enough meaning from that stage to evolve into the next. These he called the Maturational States of Development. He showed that cognitive growth occurred through interdependent experiences and that students must move from one stage unto the next stage in order to fully develop cognitively (Lerner & Kline, 2006).

Reading

Expanding upon Flavell’s conceptual theory, Baker and Brown (1984) discussed the relationship between metacognition and literacy, in particular reading. They were concerned with what students bring to a literacy experience which determines what they think about that experience and how they monitor and repair it to regulate their learning.

Baker and Brown (1984) stated it is through the use of strategies that individuals control their cognitive efforts such as thinking about what they will do, monitoring their effort, regulating difficulties, and testing and revising their learning techniques.

As the research in metacognition has progressed, theories about when and how it is developed have also advanced. Flavell (1979) initially found that students in primary grades struggled to use metacognition when they had difficulty recalling information. As a result, metacognition was first considered to be a skill that developed later in childhood. Kuhn (2000) suggested that it appears as early as three or four years of age and continues to be developed as the student gains literacy skills. There is evidence that students begin their metacognitive development by using simple rehearsal strategies early in elementary school, whereby they gradually gain control over their thinking. As Kuhn (2000) stated, metacognition “becomes more explicit, more powerful, and more effective as it operates more under the individual’s control. It is developmental in nature” (p. 178).

Nelson and Narens (1990) contributed to Flavell’s model by adding the concept of monitoring and controlling thought processes from cognitive actions to metacognitive actions. They thought that there is an interplay between cognition and metacognition which means that these processes are interrelated rather than independent agents acting alone. Further, Vaidya (1999) concluded that metacognition is an executive functioning tool which helps students to “plan, monitor and evaluate learning and strategy performance” (p.187).

This was a brief description of metacognitive processes used by students during the act of reading. The metacognitive processes involved in writing will now be addressed. Perkins, Jay and Tishman (1993) asserted that it is important for students to

learn the “language of thinking” so that they are able to describe what they are thinking in terms of vocabulary that makes sense to them and to others (p. 72).

Writing

Only a few researchers have looked at how young students develop metacognitive strategies for reading and writing (Baker & Brown, 1984; Rowe, 1989). What they saw was evidence of the beginning of planning, self-correction and prediction while performing reading and writing tasks. They also noted it in student’s speech while they were performing these literacy tasks. More recently, research has focused on the processes of thinking while students are involved in the process of writing.

Self-regulation is a strategy that students develop to help them size up a task and determine how to approach the learning situation and complete it. It is also a way of monitoring what is being learned as well as to revise it if necessary. These metacognitive skills are developed and refined over time. (Borowski, 1992).

Jacobs (2004) studied the metacognitive awareness of students in kindergarten. The students were asked to tell her what they were thinking about while they were writing. Questions used included; “Tell me what you were thinking about while you were writing, and “How did you decide what to write about;” “How do you think that idea came into your mind?” (p. 20). She did this twice a month from October through March while she recorded their responses with an audio recorder. The results of the study showed that these kindergarten students were able to think about their writing in a metacognitive way when asked structured questions. Graham and Hebert (2010) found from their meta-analysis that when teachers have students write about what they read,

their reading comprehension improves. Further, from the literature, the teaching of spelling skills helped students improve their reading skills.

Metacognition is a useful area to study as it helps inform a teacher what to teach students who struggle with the application of their metacognitive resources to their writing tasks. Teachers must be aware of the types of tasks and the processing demands that a task will require in order to help students who struggle to develop their abilities to plan, regulate, monitor, and evaluate their work (Livingston, 2003). Because writing development is closely related to spelling development and often works in harmony, the next section will address what is known about metacognitive development and spelling (Bear & Templeton, 1998).

Spelling

Poor spellers often have difficulty deciding what to write based upon the words they can spell. They may also lose track of their sequence when working hard to recall how to spell a word (Moats, 2005). Kreiner and Green (2000) found that the good spellers monitored their spelling when writing and were aware of which words were spelled correctly. Good spellers in their study either avoided words they did not know how to spell or they also used strategies for spelling words they might not know. However, Kreiner and Green (2002) found that those who were low in monitoring abilities would often think that they spelled it correctly when they did not. Garner (1987) stated that students may find themselves in a problematic situation when there is cognitive failure that goes unchecked and is further complicated by metacognitive failure.

Motivation further complicates this process when a student is having difficulty and does not want to exert the energy it takes to employ metacognitive processes to solve

the problem (Garner, 1987). She also thought that students will feel unsure about their spelling when they deviate from regular spelling rules and spelling generalizations and move into spelling areas of which they are unfamiliar.

Block and Peskowitz (1990) asserted that unless the speller is able to use some type of spelling strategy, he or she will not feel as confident about his or her spelling abilities. Therefore, they believed that students need to learn how to develop correct spelling by eliminating incorrect alternatives. Block and Peskowitz (1990) found in their study that students would benefit, as well as gain word knowledge from teachers giving them “explicit instruction in metacognitive spelling strategies” (p. 162). However, they argued that more research in the area of strategy instruction is warranted.

This section was focused upon the process of metacognition in typical learners in the areas of spelling and writing. In the next section, the process of metacognition for students with learning disabilities will be described.

Metacognition and Learning Disabilities

Many students with learning disabilities have difficulty with cognitive information and have difficulty using that information in a metacognitive format (CEC, 2009). The goal of teaching is to help students become independent learners and metacognitive strategies have the potential to help students with learning disabilities move in that direction (Vaidya, 1999). Typical learners are able to realize by themselves what effective learning strategies are and what works for them. Students with learning disabilities most often are deficient in strategy knowledge and use and must be taught strategies explicitly (Vaidya, 1999).

While typical learners are progressing academically, students with learning disabilities may demonstrate deficits in cognitive issues such as difficulty organizing, listening, recalling information, and attending to instruction. Students with learning disabilities are often “overwhelmed, disorganized and frustrated in learning situations” (Vaidya, 1999, p.187). The difficulty students with learning disabilities have cognitively, affects their ability to reflect, monitor and regulate their learning.

Few studies have been conducted that help define the relationship between cognition and metacognition (Vaidya, 1999). To become strategic learners, students with learning disabilities must have access to metacognitive strategies in order to organize the information and transfer the knowledge of the strategy to the problem to be solved (Vaidya, 1999). The results of the Darch et al. (2000) study confirmed that students with learning disabilities have difficulty using strategies and when used they were not effective. Darch et al. (2000) recommended that in order for the students to become autonomous with their spelling, they would need to have direct, systematic instruction in strategy use, when and how to use those strategies.

There are several possible causes for limited metacognitive abilities. Students with learning disabilities may have skill deficits which render strategy use inefficient. Memory skills have also been identified as a possible cause for reduced metacognition. Memory association strategies (i.e. mnemonic devices) have been tested as a strategy to help remediate memory difficulties and provide students with a way to retrieve information that would otherwise be difficult for them to recall. They have also been used as instructional techniques to teach skills such as acquisition and control of strategy use (Palinscar & Brown, 1987).

The next section will examine some of the research in the area of good spellers and poor spellers' development to understand how students progress through the stages of spelling. These stages were also useful indicators to determine where the subjects in this study fall in terms of their spelling development and whether that relates to the level of their metacognitive abilities.

Spelling Development in Good Spellers and Poor Spellers

Spelling is a very complex task. It intersects with visual processing abilities, orthographic knowledge, memory, phonological processes as well as metacognitive processes (Frith, 1980). This study will not attempt to distinguish or delineate the differences among all of the various processes involved; however, it will present information about the metacognitive processes needed for spelling successfully. Typical spelling development, as well as difficulties with spelling will be discussed in this section.

Henderson and Templeton (1986) described spelling as "progressive cognitive mapping of a complex but orderly system." They further described spelling as an "active process not a passive one" (p.314). Varnhagen (2000) noted that second graders who are at the beginning stages of learning the spelling system may not be able to notice a misspelled word as well as a fourth or sixth grader at a different stage of development. Also noted in the study were the attitudes of second graders toward misspellings when read in a story. She noted that the students' attitudes toward good spelling and poor spelling are already beginning to form in second grade.

Bear and Templeton (1998) described six stages from developmental spelling research that typical students pass through as they learn to master the spelling process:

Prephonemic: (ages 1-7/ Pre-K to middle of first grade) Emergent:
Make scribbles and lines and draw, mock linear writing.

Semiphonemic/early letter name: (ages 4-7/K to middle second grade)
Early beginning: Write initial and final consonants which are early examples of invented spelling.

Letter Name: (ages 5-9/Early first to early third grade)
Middle and late beginning: At this stage, children use invented spelling, they begin to look at vowel patterns, spell CVC words, include some blends and digraphs.

Within-word pattern: (ages 6-12/First to middle of fourth grade)
Transitional: Child starts to grasp the concept of within-word patterns, double letters, multisyllabic words, and long vowel patterns.

Syllable juncture: (ages 8-18/Third through eighth grade) Intermediate:
Able to spell two to three syllable words correctly, including prefixes and suffixes, spell more uncommon vowel patterns

Derivational constancy: (Ages 10 and up/Fifth to 12th grade) Advanced:
Is able to understand root word connections, spells most words correctly, using meaning to determine word choice.

From this developmental theory, the popular term, “invented spelling” arose and is now a well-used term to describe how young students learn to spell phonetically and what the final product represents (Gentry, 2000). Invented spelling is considered a developmental phase that students pass through when learning to spell. Students adopt a system for using letters to spell based mostly on how the word sounds to them or how they articulate the sounds in a sequence to produce a word (Frith, 1980). An example of inventive spelling is when a student spells the word “tuth” for “tooth.” All of the sounds for the word are present however, the actual orthographic representation is not accurate.

Ehri (2000) asserted that spelling is closely related to reading as students use the same processes when reading and writing. She believed that there is a need to recognize whether words are “spelled correctly or incorrectly as the words are being read” (p. 20).

Ehri (2000) further stated that while reading, students must notice whether a word is spelled correctly or not and that reading words is easier for a student than spelling words. The more efficient a student is with his or her spelling system, the more rapidly he or she will identify words during reading (Templeton, 1991). Adams (1990) agreed with Templeton about the importance of spelling development and the relationship of spelling to reading when she stated “skillful reading depends critically on the deep and thorough acquisition of spellings and spelling-sound relationships” (p. 421). Kamhi and Hinton (2000) stated that the level of reading ability in a student is a good way to predict their spelling ability.

Moats (2005) also believed that reading and writing rely on the same relationship between letters and sounds. She stated that writing, more than reading, is a combination of thinking about what to say, how to say it and how to spell it. It becomes a more complicated activity than that of reading because it takes more skill energy to complete.

The study done by Lennox and Siegel (1996) investigated whether there was a difference in spelling strategies between good spellers and poor spellers as they advanced through the primary grades. Using a spelling dictation task from the Wide Range Achievement Test-Revised (WRAT-R), they discovered that for poor spellers, their visual scores on the test remained the same in fifth grade as it was on the baseline test, while their phonological scores increased over time. The opposite was true for good spellers whose scores increased over time. They concluded that poor spellers appear to follow a different developmental pattern across ages. Poor spellers tend to use visual processes more than phonological processes compared to average spellers. As a result, it takes poor spellers longer because they use different processes, to reach the same spelling

level as good spellers. Lennox and Siegel (1996) estimated that there is a five year lag in development between good spellers and poor spellers in the upper elementary grades.

Over time, typical learners begin to develop an awareness of distinguishing consonants and vowels, word patterns, letter sounds, as well as how meaning is connected to spelling (Bear & Templeton, 1998). This is the point where metacognition begins to develop so that the student is able to conceptualize a word, write that word, and then determine if the spelling is either correct or incorrect. Spelling judgments are typically made before and after a word is attempted (Block & Peskowitz, 1990). Much research has been generated about spelling development in typical learners, but we will now examine what has been studied about spelling and students with learning disabilities.

Spelling and Learning Disabilities

“People who are good readers may be poor spellers, but those who are poor readers are usually poor spellers.” (Kamhi & Hinton, 2000, p. 37). Spelling by itself is not considered a learning disability even though it is included in the definition; however, many students with learning disabilities also have difficulty with the spelling process. Frith (1980) and Juel (1988) stated that spelling problems in students who are poor readers are more difficult to manage and last longer than reading problems.

Spelling is a skill that is interrelated with orthographic knowledge, phonological processes, morphological, as well as semantic abilities (Kamhi & Hinton, 2000). The student with learning disabilities has difficulty integrating these specialized skills to produce an efficient written product. Various researchers have identified specific characteristics about students with learning disabilities and their spelling skills. Alley and Deshler (1979) found that students with learning disabilities have difficulty spelling

words without errors, as well as recognizing that they have spelled their words incorrectly. The recognition of those errors relates to the presence or absence of the speller's metacognitive abilities. Students with learning disabilities who have difficulty with spelling are typically deficient in sound-symbol relationships as well as in the processes of learning, attending, and remembering information in print (Lombardino & Ahmed, 2000).

From their case study of an adult with learning disabilities, Bailet and Lyon (1985) found that the subject of the case study had difficulty with visual and auditory processing deficits. Even though the subject was at a fifth grade spelling level, he was able to make improvements when given structure which helped him to isolate base words. Further, he had difficulty with recalling and using spelling rules. Bailet and Lyon (1985) concluded that the subject's failure to demonstrate adequate rule knowledge of these systems, generally is true in the learning disabled population in general. Darch et al. (2006) concurred, stating that students with learning disabilities have difficulty using strategies for "systematic application of spelling rules" (p.1).

Students with learning disabilities typically have profiles where spelling is noted to be among their weakest skills (Gerber & Hall, 1987). The authors also noted that even with extensive practice, students with learning disabilities fail to use spelling strategies which affects their organizational skills for spelling. According to Gerber and Hall (1987), students with learning disabilities could become good spellers but not at the same rate as typical learners, because their processing speed and acquisition may be slower and not as organized as their typical peers.

Darch et al. (2000) felt it was a matter of deficient strategy, not their cognitive deficits, that caused second graders in their study to have difficulty spelling unknown words. Students with learning disabilities should be taught how to use strategies appropriately and directly and then can improve their spelling abilities with that direct information (Berninger et al, 1998; Darch et al, 2006).

Worthy and Invernizzi (1990) investigated spelling errors of typical learners and students with learning disabilities, and found that older students with learning disabilities tend to make the same types of errors as younger typical learners. They concluded that this means that students with learning disabilities continue to develop their spelling skills even though their spelling skills lag behind those of their peers. The results of their study suggested that students with learning disabilities do not have visual, auditory or phonemic deficits even when they demonstrate reversals of letters. This led to their conclusion that students with learning disabilities should not be taught spelling in just one manner, but that they need a combination of approaches that include the meaning of words, orthography, and word study such as origins and root words.

Spelling and Metacognition

Most of the research in metacognition relates to its relationship to reading comprehension (Baker & Brown, 1984, Flavell, 1979). Not as much research has been generated in the area of spelling and its relationship to metacognition (Sabey, 1999; Schlagal & Schlagal, 1992).

Students should use metacognitive skills while attempting to spell words. It should “affect judgments of how difficult a word will be to spell or how likely a rendered spelling is to be correct” (Block & Peskowitz, 1990, p.152). In order for a student to find

a spelling error, he or she must be able to read the word that needs to be evaluated which includes the “phonetic and syllabic structure of words, as well as the application of specific spelling rules and lexical knowledge” (Maki, Vauras, & Vainio, 2002, p. 190). The student must be able to generate metacognitive strategies to determine if his written product is correct, and failure to use such metacognitive strategies to determine if his written product is correct, and failure to use such metacognitive strategies is evident in struggling writers. Self-regulation, the metacognitive strategy which includes the processes of knowing when a word is in error, is more delayed in poor writers than it is in skilled writers (Graham & Harris, 2000).

In their study, Block and Peskowitz (1990) found that students were able to develop metacognitive knowledge about words that teachers had asked them to spell. They also asserted that students learn to spell accurately when they are able to develop strategies that help them decide if a word is spelled correctly or not.

Kernaghan and Woloshyn (1995) noted that after typical first grade students were given multiple strategy instruction along with metacognitive information for spelling, they outperformed those who received strategy instruction or traditional language arts assignments alone. This led these researchers to conclude that first grade students are able to acquire effective spelling strategies when taught metacognitive information for spelling accuracy.

The results of Sabey’s (1999) case study of an intermediate speller with a learning disability indicated that metacognitive responses while performing literacy tasks were connected to Henderson’s (1990) stages of spelling development. However, for current developmental spelling levels, the subject was not able to discuss his spelling knowledge

in a way that appeared accurate. This study led Sabey to believe that spelling instruction ought to reflect the current metacognitive levels of spelling development of the student or the strategies that the student is demonstrating, not beyond their level of spelling development. It is important to assess where the student is functioning with spelling development and then move their skills from that point in order to prevent gaps in skill development by moving them too quickly.

Finally, metacognition and spelling is an understudied area; much of what has been done relates to treatment studies. An article by Gerber and Hall (1987) stated that very little about spelling as a developing cognitive process is understood, especially for students with learning disabilities. The next section will tie together the research in the areas of metacognition, spelling, and learning disabilities.

Metacognitive Spelling Strategies and Learning Disabilities

Research in the areas of metacognitive strategy use during spelling and students with learning disabilities has been limited (Darch et al., 2000). Activating metacognition is necessary when one is attempting to spell words accurately. It affects how the spelling of a word is addressed, and whether or not it is perceived to be correct or incorrect (Block & Peskowitz, 1990). Students with learning disabilities often have difficulty with organizing their thoughts and planning their written work as it requires proficient language skills to respond to the variety of tasks. “In order to use metacognitive strategies effectively, students must learn to talk to themselves about what they are doing and how they are doing it” (Singer & Bashir, 1999, p. 267).

It appears from the research that students with learning disabilities are less effective in the use of spelling strategies while attempting spelling tasks than their typical

peers, either due to processing difficulties or ineffective rule application (Bailet & Lyon, 1985; Darch et al., 2006). While some researchers suggested that deficient rule application with or without processing difficulties may be at the root of spelling problems (e.g. Bailet & Lyon, 1985), others conclude that even with spelling practice, students with learning disabilities appeared not to use spelling strategies (Gerber & Hall, 1987). Darch et al. (2006) found from their study focusing on teaching students with learning disabilities to use rule-based strategies or traditional spelling strategies, that more explicit spelling strategy instruction benefitted the students with learning disabilities. Predictable words were easier to teach than irregular words which may require more intensive instruction over a longer period of time.

The framework for this study, was the modification of the study that Darch et al. (2000) conducted. That study examined the metacognitive strategy use in four second grade students while they were attempting to spell unknown words. The researchers found that the students in their study possessed unrefined strategies. They concluded that it was because of strategy deficits rather than cognitive deficits. They also noted that students rarely attempted any systematic spelling strategies when they were writing sentences and appeared “overwhelmed with the mechanics of writing sentences” (p. 22). Results of that study showed that four major categories of spelling strategies emerged:

Rule-based: comments that referenced appropriate rule-based strategies

Multiple: comments made indicating the use of more than one strategy during spelling

Resource-based: indications of the use of prior learning experience

Brute Force: reports of less sophisticated procedures and recall

information. These methods indicate tenacity rather than the use of systematic strategies (p. 20).

Summary

Additional studies in the area of metacognitive strategy use and spelling in students with learning disabilities were reviewed for this study. However, those studies were primarily concerned with the teaching of strategies to improve spelling. This current study focused on what second grade students actually use in terms of metacognitive strategies for monitoring and self-regulating their spelling processes when attempting to write a list of spelling words and a short story based upon a picture of their choice so those studies were not included here in this literature review.

Research on instruction has been purposely omitted as this study is not about how to teach metacognitive strategies, even though that appears to be the approach special education researchers support, based upon the literature search that this researcher conducted. Most of the research articles on metacognition have covered the topics of intervention rather than exploring what students are doing with their thoughts through assessment before designing treatment studies to teach them to use strategies.

The research covered in this chapter indicated that typical students have a developmental pattern that they follow when learning how to spell as well as in their use of metacognitive strategies. Students with learning disabilities however, do not demonstrate the same pattern of development in the area of spelling. The pattern appears to start and stop and get stalled at certain points in the academic process. Students with learning disabilities appear to use metacognitive strategies, however not in a flexible manner or at the right time or efficiently as typical learners. This deficit causes students

with learning disabilities to have difficulty with spelling progression, applying the use of spelling rules as well as growing in their use of metacognitive skills.

CHAPTER THREE

Methodology

“Watching and taking notes is important, but there
is more to life, even life as a researcher.”

Graue and Walsh (1998, p. 103)

Purpose

The purpose of this study was to determine what types of metacognitive spelling strategies second grade students with learning disabilities use when performing isolated word and story generation tasks. Much has been written about how to teach strategies to students while reading, writing, and spelling but not as much information is available as to how, when, or if students, especially those with learning disabilities, use metacognitive skills to monitor and self-regulate their spelling process. This chapter will present an overview of the participants, data collection, research design, and data analysis procedures.

Participants in the Study

Student Profiles

The subjects chosen for this study consisted of two second grade students with learning disabilities in the same school from the same second grade general education

classroom. The school, with an urban population, is located within a small-sized Midwestern city in central Indiana. The names of the human subjects (two teachers and two students) who will be described in this chapter, have been changed to protect their real identities.

Karen

Karen is a second grade female student who was 8 years and 4 months old at the beginning of this study and 9 years old at the completion of this research study. She is multi-racial as her mother is white and her father is black. She lives with her mother and younger sister who is in the first grade at the school in this study. She has several cousins at the elementary school she attends and often stops in the hallway to give them a hug. Her mother struggles with helping her to stay organized as well as helping her to complete her homework. Karen is a quiet girl who enjoys helping others when needed. She is very pleasant with a soft voice and big smile; however, she has a history of temper tantrums when she falls on the floor and cries or refuses to get up when something does not go her way. The researcher did not witness this during the time she observed Karen; however, Mrs. Saturday, Karen's general education classroom teacher, reported that it still happens about once weekly. She often has difficulty attending to a task for long periods of time as she gets easily distracted by noise and movements around her. She then looks up, stops working and watches the situation until it is resolved. Sometimes she gets up from her seat to become involved in the situation. Because of this, she often does not complete her work in a timely manner both in the special education resource room as well as her second grade classroom. She talked several times about moving to another home at the end of the school year.

During quiet moments Karen loves to draw. During recess she can be seen jump roping on the playground in good weather. She has a best friend in the classroom who sits in the desk next to her. She has participated in basketball and attends a mid-week church program for children at a local church.

Karen was initially diagnosed with a specific learning disability in the first grade. She previously received speech and language services for articulation but reached her goals and “graduated” at the end of first grade. Karen continues to receive occupational therapy services twice per month for fine motor difficulties. Karen’s academic strength is in the area of math while her specific learning disability is in the area of reading and writing. Based upon her Individual Education Program (IEP), she receives resource room assistance for one half hour daily in the area of reading and writing with two other students from her class.

Karen is often unorganized. Her desk and work area are messy. Her pencils are short, without erasers, and unsharpened. Even after being given several pencils and dry erase pens by the researcher, Karen has misplaced them or says she has taken them home. Often her school supplies are missing from her desk or desktop. During seatwork, she is frequently missing the needed supplies to participate. She is supposed to wear glasses. At the beginning of the school year she did not have glasses because they were broken. Mid-school year, she got new glasses. She wore them for about a week and the researcher did not see her wear them after that.

Her written work is messy. She writes large and outside of the lines provided on her paper. When she makes an error, she either crosses it out or erases the error only partially, making her paper difficult to read. She often omits punctuation as well as

capitalization at the beginning of the sentence. Her sentences tend to be run-on sentences with *and* connecting a different series of thoughts.

In the resource room Karen works with a group of three students and the special education teacher. The two other classmates are second grade boys who are in her second grade classroom. In the general education classroom, she sits in a group of four desks which includes two boys and another girl.

Edward

Edward is a second grade male student diagnosed with a specific learning disability. He was 8 years and 9 months old at the beginning of the study and 9 years 4 months old at the conclusion of the study. He is a multi-racial child whose father is Hispanic and mother is white. Until recently his father lived in the home; at the present he is living with his mother and sister. His brother at the moment is out of the home as he is in jail. The teacher reported that this affected him quite a bit last year. Edward is very quiet and soft-spoken. He talks about his older brother and sister as well as where his mother works and what she does. He spends time with a grandparent who takes him fishing as well as playing with his dog. He does not talk about friends in his class or by his house. He does not talk about playing with anyone at recess, he just states that “he runs around by myself hoping nobody catches me.” He enjoyed one-to-one interaction in the special education classroom while working on this study; however, when the researcher was observing and assisting in his general education classroom, he seemed embarrassed about the extra attention he received from the researcher. Edward is “quite the artist” as stated by his teacher. He loves to draw and would spend most of his time doing that if given the opportunity.

Based upon his Individual Education Program (IEP) he receives resource room assistance daily for one half hour for reading and writing instruction with two other students from his second grade classroom.

Edward is thin and small for his age. He works quietly at his desk during seat work. He is slow to respond to oral comments or directions when he is busy working. If you call his name, he is slow to respond appearing as if he did not hear you and is surprised when being addressed. Because of this, he often misses instructions for transitions or directions for assignments. Mrs. Saturday feels that Edward has Attention Deficit-Hyperactivity Disorder (ADHD); however, she has not pursued verification because she feels it has not affected his academic work this year. During individual reading time, he can be found underneath a desk with a chair pad reading a book by himself. He enjoys receiving a sticker after each session with his special education teacher. He never forgets to get his candy treat and put a sticker on his sticker chart to earn enough stickers to go to the treasure box. He is the first one finished with his work with his special education teacher each day.

Edward's desk area is neat and tidy. He knows where his materials are and is prepared to begin a task when asked to do so. His writing is neat and orderly and he takes time being careful to stay within the lines, whether it is for a story or a written spelling list. He sits with a group of students whose desks face each other. There are two girls and one other boy in his group in the general education classroom.

General Education Teacher Profile

Mrs. Saturday is a second grade teacher in a large urban elementary school in a small town in central Indiana. She is one of three second grade teachers at this school.

She has been teaching for 15 years. She has taught at this particular school for ten years. Her bachelor's degree is in sociology. Her teaching experiences include teaching in Florida, Arkansas, and Indiana. She has also been a teacher of English Language Learners as well as a second and third grade teacher.

Mrs. Saturday is a very soft-spoken teacher who spends a large amount of her day providing positive instruction and comments to her students. She is very conscious of environmental issues as it is threaded throughout the instructions for activities involving materials, as well as using water and paper and how they relate to renewable resources. She also likes to bake, as evidenced by bringing in treats for the students on special days to reinforce a particular theme she is teaching. The students say that "she is a baker." However, she is proactive with the students in talking about making "healthy choices" in regard to the food they eat and the drinks they choose. She posts her weekly lesson plans on the school website for the convenience of her students' parents.

She learned to teach reading during the whole language era so she feels that is fine "if they are already readers", however, it is not as helpful for those who struggle to read. During the last eight years she has begun to focus on "explicit, systematic phonetic approach to help struggling readers." She has taken several classes and attended workshops for *Word Workshop*, the approach that the school in this study has adopted for K-3 reading instruction.

Mrs. Saturday is married with no children and lives not far from school. Her husband is a poet. She was raised in South America and speaks fluent Spanish. She enjoys traveling with her husband to foreign countries. Mrs. Saturday also likes to garden.

Special Education Teacher Profile

Mrs. Paul is a special education teacher who serves students in grades K-3 at the school in the study. Her classroom is just across the hall from Mrs. Saturday's classroom. Mrs. Paul has been a special education teacher for six years and a general education teacher for ten years. She took 14 years off from teaching to raise her family. Mrs. Paul has a bachelor's degree in elementary education and master's degree credit hours and certification in special education. Mrs. Paul has been at the school for four years and was previously in the same school system until the school where she worked was closed.

She is quiet, calm, and soft-spoken with the students who come into her room for assistance. Her calmness appears to have an effect on the students she instructs as they remain calm and compliant in her classroom, even those whose behaviors are challenging when they enter her classroom. She is very task-oriented and wastes no time in getting started with lessons and keeping the students on task while they are with her. As part of her positive reinforcement, each student receives two Skittles after their work is complete along with a sticker to put on a sticker chart which when filled, earns them a prize from the treasure chest.

Mrs. Paul uses the same reading program to work with special education students that Mrs. Saturday does, *Word Workshop*. She works on specific skill areas such as word families, the spelling of words in word families as well as writing sentences, using those words while working with Karen and Edward. She attended inservice sessions to learn this approach as well as the monthly inservices on math instruction that are provided at this school. Even though Mrs. Paul and Mrs. Saturday are across the hall, Mrs. Saturday

reports that they “really don’t collaborate about the students we share. We’ve just really never had the time to sit down and do that.”

Mrs. Paul is a short thin woman who walks very quickly inside and outside of the classroom. She dresses casually and appears to enjoy her work. She recently said, “I’m old enough to retire but I am not ready yet.” She is married and has one child who is currently in college. She was on a medical leave as her husband was battling cancer and needed her support during this time of treatment. Unfortunately, her husband lost his battle and passed away during the seventh month of the study. It was unknown if she would be able to return to the classroom before the school year ended so a substitute teacher had been provided for the students who receive instruction in her classroom.

Classroom Environments

General Education Classroom Profile

Mrs. Saturday’s classroom is a typical square room with brick walls, white board and Smartboard, windows on one side of the classroom as well as a window in the door. Her room is painted beige and has items posted on the walls to remind students of the rules of the classroom, procedures, daily routines, as well as a behavior chart with various colored cards that indicate whether a student is doing well, being warned, lost recess, or is getting a call home to their parent. There are also pictures depicting letters as well as examples of cursive letters. At the beginning of the year, Mrs. Saturday had an academic specialist that assisted her all day in the classroom. That assistant left; now she has specialists who come into her classroom just to assist during small group literacy block time.

The desks are arranged in groups of four facing each other. There are boys and girls in each desk group as well as students of mixed abilities at each desk pod. Mrs. Saturday's room has 23 students. There are 12 girls and 11 boys that make up her second grade classroom. Her room is a mixture of different ethnic groups including students who are: 5 bi-racial, 11 white, 5 black and 2 Hispanic. Five of the 23 students in her classroom are receiving special education services daily.

Special Education Classroom Profile

Mrs. Paul's classroom is across the hall from Mrs. Saturday's room. It is a classroom very similar in size to Mrs. Saturday's room except it is a few feet shorter on each side of the square shape of the room. Mrs. Paul has a bathroom in her room as well as a sink in the classroom for washing hands and getting a drink. She has her room divided into six sections. There is a kidney shaped table area where she works, an area for her aide who works with her full-time, and an area for projects. There are a reading area with carpet and bookshelves and then a small area by the window for her desk and computer. A set of three desktop computers line the wall next to the reading area. There is also an area near the sink that is called the "sensory area" where students can come to "calm" themselves with different pieces of equipment such as bouncing balls. She has several students with autism who need a sensory break in her room.

Mrs. Paul works with K-3 students who are in need of special education academic services. Her groups typically consist of three students at one time. She also has a full-time assistant who works in her room and sees small groups of students at the same time as Mrs. Paul. Mrs. Paul plans the lessons and does progress monitoring of the aide's

students. The aide has been at this school longer than Mrs. Paul and knows the school and staff well, as well as the children and their families.

School Profile

Based upon the most current data, the 2008-09 School Data Information provided by the Indiana Department of Education (IDOE) Website (www.doe.in.gov/data), the school in this study is a Title I K-5 school with an enrollment of 319 students. The school originally opened in 1960. Although it is listed as a rural location, the boundaries encompass much of the inner-city of this small Indiana town. It resembles a typical school building constructed of light brick on one level with the largest portion of the building being the gymnasium. The interior is painted brick blocks with gray tile floors and tile ceilings with fluorescent lights. The school has a small library as well as a cafeteria where the students eat breakfast and lunch. Kids Hope USA volunteers from a local church visit students to tutor them for one hour weekly. This same church also supplies the teaching faculty with treats each week which can be found by the faculty mailboxes in the office.

The school has a 77% free and reduced lunch student population. The student population is: 55% White, 21% Black, 12% Hispanic, and 12% Multiracial. This school is in Year 4 of School Improvement for Adequate Yearly Progress (AYP) purposes. The school will be restructured as mandated by the State of Indiana for the fall of 2010 which means in this school's situation, a reallocation of all staff except the principal.

In addition to 13 full-time teachers in grades K-5, there is also a full-time speech-language pathologist, a teacher serving students with emotional disabilities as well as two full-time special education resource room teachers.

Because of the AYP status of the school, a consultant from the IDOE provides direction for instruction on a regular basis. School inservices in math and reading are also provided by a local university professor. Her program, called *Word Workshop*, is taught to all teachers in grades K-3 and then follow-up instruction and supervision are provided. Substitute teachers are secured so that the teachers can regularly attend these sessions to increase their knowledge and use of research-based practices in teaching reading and mathematics.

Description of the Reading Program Used in General Education and Special Education Classrooms

Word Workshop

The reading program used by Mrs. Saturday and Mrs. Paul is called *Word Workshop*. This program was created by Dr. Roxie Sporleder (2007), a local university professor, who has taught teachers at this school how to use this program. The objectives for this reading program are as stated in the *Word Workshop* handbook:

This is a research based approach designed to help students hear the individual sounds in spoken words and to develop an understanding of the structure of our language. Each component has been carefully chosen to help students develop awareness of the sounds of words and be able to represent those sounds correctly on paper. Students will gain an awareness of the relationship between the spoken word and the written word (p. 16).

Mrs. Saturday spends a half hour each day in whole class instruction teaching from *Word Workshop*. Small group time is spent doing activities that reinforce the skills the students need to work on such as word families, phonemic segmentation, phonemic blending, or writing the sounds. Daily lessons include instruction and application in phonemic awareness, spelling the sound, spelling the words, reading and decoding words from simple to multisyllabic words. Dictation is a large part of the lesson framework in that the teacher says the word orally, the students attempt it on a whiteboard and then the teacher puts the correct spelling on the whiteboard. Also part of the prescriptive program is time spent reading a “just right book” for 30 minutes daily. A “just right” book is described as a book at the student’s instructional level (Sporleder, 2007). A written assignment is also suggested that is sequenced throughout the school year from just one sentence to a whole paragraph.

Mrs. Paul uses *Word Workshop* with Karen and Edward. She works specifically with word families, reading, decoding and spelling related words as well as reading comprehension and writing activities. She spends a half-hour working on specific skills from their Individual Education Program (IEP) that Karen and Edward are developing such as spelling, decoding, writing, and reading comprehension.

This program is very explicit, systematic, and rule-based which assists all students at the beginning reading/writing level, but particularly those who struggle with literacy skills. The students are cued to sound out when they have difficulty spelling a word while writing and reading in both the general education and special education classrooms.

Subject Selection Method

As part of the qualitative design for this study, it was decided that the number of subjects would be two second grade students with learning disabilities. It was also determined that they should be in the same second grade general education classroom so that they were receiving the same instruction in the area of language arts. Another criterion for selection was that the students received their special education services by the same special educator. The subjects were selected randomly based upon the above criteria by the principal and the Director of Special Education for the school district.

After the Institutional Review Board (IRB) application was approved, (Appendix G) and approval from the school district special education director (Appendix D), a meeting was held with the special education director for this school district. After the director reviewed the special education enrollment criteria for the study, three students were identified in one school who fit the criteria. A meeting was scheduled with the researcher, the special education director, and the principal of that school. The principal found from looking at the class lists that two second grade students with learning disabilities in the areas of language arts were in the same second grade classroom.

The principal approached both the second grade teacher and the special educator requesting their participation in the study. When they agreed to assist, the Parent Informed Consent forms (Appendix E) were sent home to the parents to seek approval for their students to be involved in the study. The student's approval to participate in the study was also indicated on the same form.

Description of Measurement Procedures

For the purposes of this study, there were three types of data collection

used to generate information to answer the research questions; those included: observations with anecdotal notes, interviews, tape recordings of the individual sessions with the students as well as artifacts of the writing the students produced. This is referred to as methodological triangulation and helps to confirm observations across three different data collection methods (Willis, 2007). An individual standardized spelling test was also administered as a baseline measure to determine the level of spelling ability of each individual child at the start of the study.

Observations

Observation from different perspectives and vantage points was planned for this study in two different classrooms where the subjects spend part of their school day (Graue & Walsh, 1998). For this portion of the data collection, classroom observations were conducted for two weeks. The researcher visited the classrooms initially so that the students could become comfortable with the researcher's presence. Descriptive notes were generated about what was observed during the language arts instruction time in the classroom. An observation was also completed at a different time of the school day, during math instruction, to get a well-rounded view of the classroom at different points in the school day. Merriam (1998) suggested that the beginning observations will be global. Over time, the researcher will move from being a spectator and transition to being an observer/participant in the setting of the general education classroom as well as the special education classroom. Such elements should be noted while observing: the physical setting, the participants, activities and interactions between teacher and student and student to student. Once the novelty of the researcher's observations had worn off, then the interviews of the randomly selected students began. The researcher's role as

participant/observer began as an observer in the classroom and moved to interacting directly with the two students chosen for the study. Once the interview data were collected over the seven months of the study, the following two months were spent in the classroom, one time weekly sitting with the Karen and Edward and assisting them during the general education classroom literacy block time.

Interviews

The use of the interview was the major component of data collection for this study. The interviews used were conducted with each student individually. These interviews were structured in the sense that Karen and Edward were asked the same questions in the same order. An interview protocol was developed based upon the Darch et al. (2000) study with second grade students with learning disabilities. In this study, the second graders were asked pre-study questions which focused on how the students felt about their spelling skills. They also included a protocol for what they called “activity based” questions or those they asked during the activities of spelling words and then spelling while writing a story. The questions used in this study were modified slightly to fit the framework of this study. The pre-activity interview questions are available in Appendix A.

Interview Questions

The interview questions developed and adapted from the Darch et al. (2000) study were field tested initially during the Pilot Study to determine if their content was suitable for the intent of this study. Two sets of interview questions were developed and adapted from these authors’ format. The first set of questions was a pre-activity interview where the students’ perceptions about spelling were explored. (See Appendix A). The second set

of interview questions was asked during the actual performance activity when the student was first writing isolated spelling words and then during the second writing activity when the student was instructed to write a story based upon a picture that was shown to him/her (Appendix B). Probing questions such as “Can you think of anything else?” “Are you finished?” were also used as a prompt to encourage the students to talk about their metacognitive processes during the writing tasks (Appendix C).

Anecdotal or Field Notes

Field notes are a standard way to describe what the researcher is observing in the present. Often times students are not able to report all that they are doing, thus the field notes help the reader picture what is happening during the research interview. Notes were taken by the researcher while observing the classroom, observing the student, and while interacting with the student. Direct quotations were recorded during the pre-activity interview, during the spelling and writing activity that the student participated in, and in response to interview questions about the spelling strategies being used for the writing activities. Later, a full narrative was transcribed from the field notes to give a richer description of what transpired during each session (Graue & Walsh, 1998).

Audio Recording

All individual time spent with the students was audio recorded. In addition to the audio recording, field notes helped to create a well-rounded picture of the interview setting. Anecdotal notes captured non-verbal cues of the students while the audio recorder recorded verbal interactions and responses between the researcher and the participant. The recorded sessions were transcribed immediately following the interview to ensure a more accurate recall of information gathered from the students.

Nominal Data

Nominal data counts were used to record frequency of spelling strategy patterns for metacognitive strategies. Nominal data consisted of keeping track of certain behaviors such as delays in responses, patterns of strategies observed during written spelling activities, any type of relevant activity level such as moving around in seat, staring away, biting on a pencil, or out of seat behavior. Sequential descriptions of how the data were collected are presented in the next section.

Research Design

Descriptive Research – Using the Qualitative Case Study Approach

This research utilized a qualitative case study approach to help answer the following research questions:

1. Are second grade students with learning disabilities able to reflect on and report the strategies they use during written spelling tasks?
2. What types of strategies do second grade students with learning disabilities use when spelling while writing a story?
3. What types of strategies do second grade students with learning disabilities use when writing a dictated spelling list?

Qualitative research is characterized as, “an umbrella concept covering several forms of inquiry that help us understand and explain the meaning of social phenomena with as little disruption of the natural setting as possible” (Merriam, 1998, p.5). Qualitative research focuses on how the participants view a certain situation and not just from the perspective of the researcher. For example, the researcher becomes a participant/observer

and gathers the data from the student, or in this case, the students answering questions from a structured interview protocol both before and during written spelling activities.

Another component of qualitative research is that data are collected directly from the subject by the researcher, rather than through the use of a survey or questionnaire (Merriam, 1998). This is important because the researcher has the opportunity to directly interact with the participant to generate the data rather than collect it from a survey or questionnaire. Another characteristic of qualitative research is that data are collected where the participants live, work, or go to school. Therefore, the environment becomes a key component in the data generation and the situational context for the study to be authentic. Most frequently, qualitative research attempts to explain theories that are unexplained or are being developed by the researcher (Merriam, 1998). This form of research also attempts to describe a characteristic or action rather than quantify it through statistical analysis scales or surveys. The researcher is available for the response and is able to directly interact with the participant while gathering data to further probe responses if the participant misunderstands or is limited in his or her verbal response.

Merriam (1998) described the case study approach as a “design that is particularly suited to situations in which it is impossible to separate the phenomenon’s variables from their context” (p. 6). Case studies help the researcher and the reader understand how an individual or a group of individuals address a problem, and then look at the variables surrounding the situation (Merriam, 1998).

Piaget used the case study method when observing his own children. He developed a theory about cognitive processes that is still referred to today. Piaget helped

lend credence to the use of this type of data collection as many other psychologists followed his model to study children and develop theories about child development (Merriam, 1998). Knowledge learned from the case study approach is different than other research designs. According to Marshall and Rossman (2006), qualitative research pays more attention to “participants’ reactions and the voice they use” (p. 5).

A descriptive case study presents depictions of the research questions in action. This is useful for an area of education that may not have been studied extensively, providing a basis for future theory development or expansion, or a foundation for building instructional frameworks that address the dilemmas discovered in the study (Merriam, 1998). The case study method helped to form a framework for studying an area of learning disabilities and metacognitive strategies that has not been extensively researched. It described what the students were doing metacognitively providing a basis for knowledge about what the student with learning disabilities brings to the spelling process.

Description of Procedures

The types of data collected for this qualitative case study have been discussed and now the framework for the study will be presented. This protocol was developed to help ensure validity and reliability in data collection and analysis procedures. “Reliability relates to stability” in terms of the data collected and methods used, as well as repeatability of the results (Willis, 2007, p. 218). However, if there is a need for flexibility and to alter the procedures, then the procedures will be reworked based upon the Pilot Study. More detailed descriptions of the procedures that were used are described in the next section.

Interview

Prior to the beginning of the study, a protocol for the interview questions was developed. Two sets of questions for the structured interview with students were adapted and modified from the Darch et al. (2000) study examining spelling strategies that second grade students with learning disabilities use. Pre-activity interview questions remained constant with each student. The pre-activity interview sought to gain the student's perspective on spelling before the actual spelling activities began (See Appendix A).

The students in the study were assessed while they were in the special education classroom during their regular pull-out session to help reduce distractions that may occur from general education classroom routines. Each student was seen individually over two visits per week during a seven-month period of the school year. Multiple visits were necessary until a pattern of spelling strategies was identified for each student. A pattern of administering spelling probes one day and picture probes the next day was followed.

After instructing the student to write ten words from a spelling list, the researcher then asked the student Activity Based questions (Appendix B) which were adapted from the Darch et al. (2000) study. During the next session the students were asked to pick a photograph from a group of five and write a story about the photograph. After completing the story, "Write as much as you can about this picture" the researcher asked students the Activity Based questions (Appendix B) and then recorded their responses. Prompting was used when appropriate with pre-determined questions (Appendix C). This study focused on how they came to the spelling or what process they used to spell a particular word and

then check to see if the word was spelled correctly. Questions in the Darch et al. (2000) study that indicate an error in spelling has been made were eliminated (See Appendix B).

Probing questions were developed. These questions attempted to clarify any responses the student made for which the researcher required more information and verification about the student's response. A standard set of probing questions (See Appendix C) was used to gain additional information when needed.

Standardized Spelling Test

After observations of the students had been concluded, both in their general education classroom as well as the special education setting, a standardized test of spelling called *The Test of Written Spelling-4* (TWS-4) (Larsen, Hammill, & Moats, 1999) was used as a baseline measure of spelling ability with the students chosen for the study. The spelling test requires the examiner to state the word to be spelled aloud. Then the examiner uses it in a standardized sentence, and then repeats the word again. The student is then requested to write the word as he or she heard it and understood it. The test yields standardized scores which can be used later in the analysis to determine the level of spelling ability of the subjects. This information was obtained so that the foundational spelling skills of the students could be measured before the actual spelling activities begin. The TWS-4 was also used after the study was completed to note any changes in the standardized scores of Karen and Edward.

Research Prompts

Words that were used for this study were chosen to represent what a typical second grade student is exposed to in his or her classroom based upon the second grade school curriculum in the particular school district. For the pilot study, a second grade

spelling list that the special education teacher used was provided. These words were used as stimuli for the students to begin the written spelling activity of isolated words. A list of ten words from the classroom spelling list was used with each student for each spelling list session. Since the examiner assessed the students' spelling words during multiple visits, a large list of second grade spelling words was needed so that these words were different for each visit. The list of words used in the study was the spelling words that Mrs. Saturday taught in her second grade classroom and was given to the researcher by Mrs. Saturday. The list of spelling words used was taken from the *Word Workshop* (Sporleder, 2007).

For the writing prompt, the student chose a photograph from a group of five that was used to help the student generate a short story. The student had a choice of five action picture photographs to choose from so that he or she will feel more comfortable writing about a subject he or she may favor or one with which he or she is more familiar. The student was asked to write a short story depicting his or her interpretation of the picture. The student was allowed to write as long as he or she needed to complete the story.

Pilot Study

Upon completion of the creation of the protocols, questioning prompts and writing prompts, permission was sought from a local Professional Development School to conduct a pilot study in a second grade classroom. The Pilot Study was necessary in order to test the procedures and protocols to be used in the research study to determine if the methods were valid and reliable in answering the research questions posed.

Two students were randomly selected by the assistant principal/special education director. She chose two students who met the criteria of being in second grade and having been diagnosed with a learning disability as well as having the same classroom teacher and special education teacher.

Permission was gained from the parents for the pilot study. The assistant principal/special education director obtained permission from the parents using the permission form developed by the researcher and approved by the Ball State University Institutional Review Board (IRB) (see Appendix E). If the probes, prompts, and methods used in the pilot study appeared to be appropriate to assist in answering the research questions, then the second part of the study would begin.

The results of the Pilot Study indicated that the protocols and procedures were sufficient for gathering the information to answer the research questions. The only protocol that was altered was that the researcher omitted the prompt, “Are you ready to take a spelling test?” It was determined by the researcher and the Reading professor that the prompt might have caused children to behave as if taking a spelling test, possibly have anxiety, not take their time, and be reluctant to correct a word they thought might have been misspelled.

Data Analysis

The next task for the researcher was to analyze the collection of field notes, audio recordings, and interviews that had been collected over the seven month period of the school year. Merriam (1998) described the different types of data analysis available to the qualitative researcher. She stated that the descriptive components are only the first in a series of how to make sense of the data collected. Interviews as well as field

notes and audio recordings were transcribed to verify the responses and processes that occurred between the researcher and the participant. Once the information was transcribed into typewritten format, categories, and patterns were investigated. Information was sorted according to commonalities, and in the case of this study, patterns of metacognitive strategy use while spelling was sought. Spelling strategies that were used to spell the word were also categorized and counted. Nominal data were used to take counts of patterns from observations, interviews, and audio recordings. A mid-study intercoder agreement was performed with the Reading professor. The researcher and a Reading professor agreed during a peer debriefing on the spelling strategies the students were using as well as their emerging metacognitive processes (Lincoln & Guba, 1985).

Patterns were coded by the researcher and the Reading professor at the end of the study to ensure intercoder agreement. The researcher and the Reading professor were in agreement about the coded patterns that the students used as well as the metacognitive strategy use that was emerging.

In order to enhance internal validity and reliability of the study, triangulation of data was used. Biweekly visits to the setting over a time period of seven months, several sources of data to draw from, and peer examination were all integrated into the study to limit researcher bias and increase validity of the results (Merriam, 1998).

Summary

From the data collected and analyzed, generalization to other populations were not attempted. A theory was developed about whether children with learning disabilities use strategies and what type of metacognitive spelling strategies they use was based upon the observations of second grade students with learning disabilities while performing two

different written spelling tasks. Once the descriptions of the metacognitive strategy have been discussed in the next chapter, implications for future research will be based upon information generated from the study about second graders' use of metacognitive spelling strategies. The holistic descriptions of interviews, observations, recordings, and anecdotal notes will give a description of what students are actually employing to assist them with written spelling tasks and how in the future this knowledge can assist educators with best practices for spelling instruction for children with learning disabilities.

CHAPTER FOUR

Results and Discussion

“The steps in this process inform one another so that coherence is achieved through convergence of concepts and experience. Rather than proceeding in a straight line, this process seems more appropriately described as a bowl of spaghetti - tangled and holistic.”

Graue & Walsh, 1998, p. 159

Results

This study addressed metacognitive strategy use in children with learning disabilities in second grade while performing written spelling tasks. This qualitative case study included two subjects, a male and a female student in second grade who had been diagnosed with a learning disability in the areas of reading and writing, which included deficiencies in spelling.

Qualitative information was gathered during a nine month period of this study in both the special education and general education classrooms. Information included observations, participant-observer interactions, as well as directly working with the two students during the spelling list and story generation tasks and interviews. The researcher

spent the last two months working with the students in the general education classroom observing their work habits, activity levels, attention ability, social interactions with the teacher and other students at their desk pods, as well as their attempts at academic tasks.

A Pre-Spelling Interview (Appendix A) consisting of nine questions was modified and developed from the Darch et al. (2000) study. In that study, there were five questions used to understand students' perspectives of their spelling abilities before beginning their activity-based interviews. It was used to inquire what the students were thinking about themselves as second grader spellers (See Table 1). Four additional questions were added and adapted from the original document to further inquire about the students' perceptions of spelling in relation to others' in their environment such as their friends and teacher.

A standardized spelling test, The Test of Written Spelling-4 (TWS-4, Larsen, Hammill & Moats, 1999) was administered to the subjects in the study before beginning the activity interviews as well as at the end of the study when the interview activities were completed (See Table 2). Another set of interview questions (Appendix B) was developed and used to detect what students were thinking while they were writing spelling words for a list as well as during a self-generated story (See Tables 3-18). Categories for the types of strategies used were adapted from Darch et al. (2000). Each response to both the written spelling list as well as the self-generated story was audio recorded and arranged in tables according to date, questions asked, as well as type of task, i.e., spelling list or story. See (Tables 3-18). Intercoder agreement for categorizing responses to the interview activity questions was conducted between the researcher and a Reading professor. Analysis of the data examined both the type of spelling strategy used,

how often it was used, as well as the type of metacognitive strategy that was observed while completing the spelling tasks. That information will also be chronicled in this chapter.

Pre-Spelling Interview

The answers to the questions that were asked of each student in the study are recorded below in Table 1. The intent of this interview was to determine the students' perceptions of spelling, their spelling ability, as well as their history as second grade spellers. This interview was conducted with the students individually during their first month in second grade; this occurred after the researcher had observed in their classroom for two weeks to set them at ease with her presence.

Table 1

Pre-Spelling Interview Questions and Responses

Questions	Karen	Edward
1. When you are writing and come to a word you don't know, what do you do? What else to you do?	Go back and try to sound it out. Sound it out.	I sound it out? (prompt: "Anything else?) No
2. If you knew that one of your friends was having problems with his/her spelling, what could you tell your friend that would help?	I would come help. I would tell her how to do something.	Tell them the word.
3. How do you think you learned to spell?	My friend helped me -Tiara.	My teacher.
4. Are you a good speller?	Yes	No (shook his head)
5. What would you like to be able to do better as a speller?	I don't know	Math
6. When did you first learn how to spell words?	When I was like four, The first word was five.	When I was four – dog.
7. Do you think some kids have trouble with spelling?	Yes	Yes (shook head)
8. How do you feel if you can't spell words when you are writing?	Sad	Okay
9. Tell me how your teachers teach you to spell.	They teach me good. They pull us out and have us spell words.	Nice.

The Test of Written Spelling-4 (TWS-4)

The TWS-4 (Larsen, Hammill & Moats, 1999) is a standardized test that assesses spelling knowledge through a dictation format for students in grades 1-12. It is frequently used in research as it gives the examiner a standard score, percentile rank, spelling age, as well as grade equivalent scores. For this study, the researcher administered the test to Karen and Edward to determine what their spelling ability was

compared with other students their age. This test was administered individually during one session at their school. Table 2 below shows the standardized scores that the students received both before the study and then after the data collection was completed. It is noted that both baseline scores fell below the average range of standard scores which is 85-115. After the study was completed, six months after the baseline test, both students' standard scores improved to within the average range for their age.

Table 2

Test of Written Spelling-4 Standardized Scores

Types of Scores	Karen 9/09	Karen 3/10	Edward 9/09	Edward 3/10
Standard Score	80	93	79	87
Percentile	9	32	8	19
Spelling Age	6-6	8-0	6-9	7-9
Grade Equivalent	1.4	3.0	1.7	2.7

Activity-Based Data Collection

The interviews were conducted to develop a general theory about if and how children with learning disabilities use their metacognitive abilities to spell words (Collins, 1998). The results of the data analysis in relation to the research questions for the study are detailed below.

Research Question #1

Are second grade students with learning disabilities able to reflect and report the strategies they use during written spelling tasks?

The interview questions that attempted to answer Research Question #1 were:

1. Were there any words you had trouble spelling?
2. How did you decide if that word was spelled correctly or not?

Each interview question will be addressed separately for Karen and Edward as well as the context when it occurred, during a spelling list or in a story generation task.

Activity Based Interview for Karen After a Written Spelling Task

Table 3 indicates that the most frequently occurring answer to Question #1 for Karen was “no” for 14 out of 20 possible responses. This would indicate that Karen was not using the metacognitive strategy, self-monitoring, to determine if she had spelled words correctly or not. However, during the last two months of the study, it was noted that she did indicate a word or words that she had difficulty spelling whether she answered no, then said the word, or yes and identified the words (i.e. “Yeah, able, table and stable.”) She did take more time to answer the questions as the study progressed. Growth in self-monitoring was noted during the last two months of the study during a written spelling list task.

Table 3

Overall frequencies for answers to Question #1 for Karen after a Written Spelling List

Were there any words you had trouble spelling?	September	October	November	December	January	February	March	<i>n</i>
“No”	1	3	4	1	2	2	1	14
“No” – then says a word she had trouble spelling	0	0	1	0	1	0	0	2
“Yes”	0	0	0	1	1	1	0	3
“I don’t know”	0	0	0	0	0	1		1
Total Responses	1	3	5	2	4	4	1	20

Activity Based Interview with Karen After a Written Story Generation Task

Table 4 indicates the choices that Karen made during the interview portion of the activity after she had written a story based upon a photograph that she chose in response to the question, “Were there any words you had trouble spelling?” Once again, the response “no” is the highest frequency of responses in this collection. She responded “no” in 9 out of 19 instances. However, Karen had more varied answers to the interview questions. It is possible that because she generated the words herself, rather than writing words from a list the researcher gave to her, that she was able to choose words that she knew how to spell. Even so, there were many instances where she, in fact, did not spell the words correctly but reported that she had no difficulty spelling the words. There was never an instance where she spelled all words correctly in any of the 19 stories that she created from a photograph.

Table 4

Overall frequencies for answers to Question #1 for Karen after a story generation task.

Were there any words you had trouble spelling?	September	October	November	December	January	February	<i>n</i>
“No”	0	3	0	2	2	2	9
“No, yes” then she names words	1	0	1	1	0	0	3
“Yes” then names word(s)	0	0	1	0	1	1	3
Just names word (s) in response to question	0	0	2	0	0	0	2
“I don’t know”	0	0	0	0	1	1	2
Total	1	3	4	3	4	4	19

Activity Based Interview with Edward After a Written Spelling List Task

Table 5 reveals how Edward responded to the question, “Were there any words you had trouble spelling?” during the interview portion of the activity after the spelling list task was completed. The majority of responses to the question was “no” with Edward answering this 12 out of the 20 opportunities for self-monitoring of the answers from the spelling list task. It was observed that the first “yes” response did not appear until week six and then during the middle weeks of the study, six “yes” responses were noted. For the last six weeks of the study, his answers were “no” to question number one. It was

observed that Edward had one instance during the entire study where he spelled all ten words correctly after the spelling list dictation.

Table 5

Overall frequencies for answers to Question #1 for Edward after a written spelling list task.

Were there any words you had trouble spelling?	September	October	November	December	January	February	March	<i>n</i>
“No”	1	3	2	0	1	4	1	12
“No” then says a word he had trouble spelling	0	0	1	0	0	0	0	1
Yes	0	0	2	2	3	0	0	7
Total	1	3	5	2	4	4	1	20

Activity Based Interview with Edward After a Story Generation Task

Table 6 reveals how Edward answered the question, “Were there any words you had trouble spelling?” during the interview portion after writing a story from a picture. Once again, the majority response was no for a total of 10 times out of a possible 19 responses. It was noted from the audio recordings that the very first day the study was begun, the student answered “give” and then three weeks of “no” responses even though he never created a story without errors for the 19 sessions of the story generation task. There were three instances during the study when he said “no” and then said a word, which indicated that he had changed his mind after giving it some thought or monitoring

his response. For the last five weeks of the study, all of his answers to the interview Question #1 were “no.”

Table 6

Overall frequencies for answers to Question #1 from Edward after a written story generation task.

Were there any words you had trouble spelling?	September	October	November	December	January	February	<i>n</i>
“No”	0	3	1	1	1	4	10
Doesn’t say yes or no, just says the word	1	0	1	0	0	0	2
“Yes”	0	0	2	1	1	0	4
“No” then says the word	0	0	0	1	2	0	3
Total	1	3	4	3	4	4	19

Interview Question #2: “How did you decide if that word was spelled correctly or not?” was the next question that was asked during the interview portion of the study following both the spelling list task as well as the story generation task. The responses to the interview questions are reported below for both Karen and Edward in the context of the spelling list task and the story generation task.

Activity Based Interview with Karen After a Written Spelling List Task

Table 7 presents the data collected from Karen in response to Question #2 during an interview after a spelling list task. Karen could not identify a consistent strategy for how she knew if a word was correct or not, based on eight responses out of 20 where she did not know if it was correct. However, in six responses she gave the researcher the rule

that explained why she spelled the word the way she did. Out of those six rule explanations, she was correct only one time in her explanation of the rule-based spelling (ie. “There couldn’t be two ee’s in the word”). During the last five out of the seven weeks of the study she answered “I don’t know” to Question #2.

Table 7

Overall frequencies for answers to Question #2 for Karen after a written spelling list task.

How did you decide if that word was spelled correctly or not?	September	October	November	December	January	February	March	<i>n</i>
“Sounded it out”	1	1	1	1	0	0	0	4
“I don’t know”	0	1	1	1	3	3	1	10
“Because – “then explains rule for why she spelled it that way	0	1	4	1	0	0	0	6
“I messed it up”	0	0	0	0	1	0	0	1
“Which way was it spelled?”	0	0	0	0	0	1	0	1
Total	1	3	6	3	4	4	1	22

Activity Based Interview with Karen After a Written Story Generation Task

Table 8 displays the data collected for Question #2 during an interview after a story generation task for Karen. She had many more varied responses to this question with “I don’t know” having 6 responses out of 19. For the other 13 responses, she did have an idea why she knew the word was correct or not. Some of the responses were

visual (i.e., “It didn’t look right” or, “I write it every day”). Others were rule-based such as (i.e., “I sounded it out or “It doesn’t have a *w* or an *a* in it.”)

Table 8

Overall frequencies for answers to Question #2 for Karen after a written story generation task.

How did you decide if that word was spelled correctly or not?	September	October	November	December	January	February	<i>n</i>
“Sounded it out”	1	0	0	0	1	1	3
“I wrote it in my story with Mrs. Paul”	0	1	0	0	0	0	1
“If it wasn’t right, I would erase it and write it again.”	0	1	0	1	0	0	2
“Because I write it.”	0	1	0	1	0	0	2
Explains rule	0	0	1	0	0	1	2
“I don’t know”	0	0	2	0	3	1	6
“It didn’t look right”	0	0	1	0	0	0	1
“It was supposed to be.....”	0	0	0	1	0	0	1
“I just spelled it”	0	0	0	0	0	1	1
Total	1	3	4	3	4	4	19

Activity Based Interview with Edward After a Written Spelling List Task

Table 9 displays data that were collected in response to Interview Question #2 during an interview after Edward had completed a written spelling list. In most cases the answer to this question was that he “sounded it out.” It was recorded 13 times out of 20 possible responses. The other six strategies that he stated he used were rule-based as well as visual. He did not state that he “didn’t know” how he came to know how he knew it was spelled correctly. It was also noted during the course of the semester that Edward, during the last 10 weeks of the study, answered this interview question the same way, “I sounded it out.” For more than half of the school year, he used the same strategy answer.

Table 9

Overall frequencies for answers to Question #2 for Edward after a written spelling list task.

How did you decide if that word was spelled correctly or not?	September	October	November	December	January	February	March	<i>n</i>
“We spell it in our class”	1	0	0	0	0	0	0	1
“Spelled it out and knew it”	0	1	0	0	0	0	0	1
“Sounded it out”	0	1	2	1	4	4	1	13
“Letters in my mind, I put them together”	0	1	0	0	0	0	0	1
Explains a rule-based strategy	0	0	3	1	0	0	0	4
Total	1	3	5	2	4	4	1	20

Activity Based Interview with Edward After a Story Generation Task

Table 10 presents the answers to Question #2 for Edward after he had completed a story generation task. A dominant answer to Question #2 was “I sounded it out” for 11 out of 19 possible responses. Edward’s additional answers were varied and did not appear to present a pattern as to how he knew his words were correct in the story. It must be noted that Edward never produced a story without spelling errors. In the last six weeks of the study, he used the response, “Sounded it out” five out of six sessions. During the first seven weeks of the study, this was the same answer given five out of seven times. During the middle six weeks of the study, he never referred to “sounded it out” as a way to tell whether his words were spelled correctly.

Table 10

Overall frequencies for answers to Question #2 for Edward after a written story generation task.

How did you decide if that word was spelled correctly or not?	September	October	November	December	January	February	<i>n</i>
"I sounded it out"	1	3	1	0	1	4	10
Talked about specific letters in the word	0	0	2	0	1	0	3
Talked about a word he was not sure about	0	0	1	1	0	0	2
"It's correct"	0	0	0	1	0	0	1
Started to rewrite a word with no oral response	0	0	0	1	0	0	1
Looked around the room for an answer	0	0	0	0	1	0	1
Total	1	3	4	3	3	4	18

Research Question #2

What types of strategies do second grade students with learning disabilities use when spelling while writing a story?

In order to answer this question, two interview questions were designed to identify the strategies that students use when attempting to spell words during written tasks. Those questions are identified below.

Question #3: If a teacher asks you to correct a misspelled word, what do you do to spell it correctly?

Question #4: What is the first thing you think about when you are ready to spell a word for a story?

Each interview question will be addressed separately for Karen and Edward as well as the context in which it occurred, such as during a spelling list or in a story generation task.

The responses to Question #3 and Question #4 are displayed in Tables 11-14.

Activity Based Interview for Karen After Performing a Written Story Generation Task

Table 11 addresses Karen's responses to interview Question #3 after she had written a story based on a photograph she had chosen. Karen would pick one photograph from a pool of five, and then write a short story about that picture. She was allowed to take as much time as she needed to write her story. Most of her stories consisted of from two to five sentences. As the researcher asked a question, she would point to a word that Karen misspelled in the story, then Karen would respond to the question. Karen had eight different categories of responses to this question that she used over the course of the study. One category "erase it, write it again, look in the book" used multiple strategies for a single word. She stated this response five times. It was not an overwhelming response as the next highest number of responses was, the use of a rule based letter discussion such as, (i.e. "I put an *a* in it, there is no *e* without an *a*, the teacher taught us that.") Also the response, "Write it at the end of the paper" was another popular strategy, it appeared four times. Karen appeared to use a variety of strategies to correct a misspelled word that the teacher identified. She occasionally would rewrite a word correctly without any assistance; however, when correcting words for this question,

Karen 90% of the time needed some assistance or prompting from the researcher to spell the word correctly.

Table 11

Overall frequencies for answers to Question #3 for Karen after a written story generation task.

If a teacher asks you to correct a misspelled word, what do you do to spell it correctly?	September	October	November	December	January	February	<i>n</i>
“Sound it out”	1	0	0	0	1	0	2
“Erase it, write it, look in the book”	0	3	2	0	0	0	5
“Cause I just guessed”	0	0	1	0	0	0	1
Rule-based letter discussion	0	0	1	2	0	1	4
Starts writing a word without an oral response	0	0	0	1	0	2	3
“Write it at the end of the paper”	0	0	0	0	1	3	4
“Think and spell it again”	0	0	0	1	0	0	1
“Write it again and sound it out”	0	0	0	0	1	0	1
Total	1	3	4	4	3	6	21

Activity Based Interview for Edward After Performing a Written Story Generation Task

Table 12 presents the data that were generated after asking Edward Question #3 during an interview regarding the story he wrote based on a photograph prompt. Edward

had a choice of five photographs from which to choose for his short story. During every story generation, Edward only wrote two sentences. When prompted to continue thinking and writing, he never wrote more than two sentences for his story during the course of the study. His stories were always about what the picture detailed rather than about an imaginary story he created based upon the picture. Eight times, Edward did not respond orally to the question, but would begin writing the word at the bottom of his paper to attempt to get it correct. By not responding to the question orally, it was thought that Edward was not able to orally report the strategy he used, but attempted to use a strategy by rewriting the word rather than reporting it orally. He was able to spell the word correctly about 5% of the time with no assistance from the researcher.

Table 12

Overall frequencies for answers to Question #3 from Edward after a written story generation task.

If a teacher asks you to correct a misspelled word, what do you do to spell it correctly?	September	October	November	December	January	February	<i>n</i>
“Sound it out”	1	0	1	1	0	0	3
“Look at the picture and sound it out”	0	2	0	0	0	0	2
“Sound it out in my mind”	0	1	0	0	0	0	1
No oral response, starts rewriting word	0	0	1	3	3	1	8
Looks around the room for the word	0	0	1	0	0	0	1
“Take something away?”	0	0	0	0	1	3	4
Letter based rules	0	0	0	0	1	0	1
“Ask a friend and sound it out”	0	0	0	0	0	1	1
Total	1	3	3	4	5	5	21

Question #4: What is the first thing you think about when you are ready to spell a word for a story?

The responses to Question #4 which occurred during an interview after a story generation task will be addressed separately for Karen and Edward.

Activity Based Interview for Karen After Performing a Written Story Generation Task

Table 13 displays the responses Karen gave to Question #4 after she completed a story generation task based upon a photograph she chose. Rather than thinking about a strategy to spell a word, Karen responded that she was thinking about “What word can I spell?” for a total of ten responses and a similar answer “What was I gonna write?” for a total of six responses. Karen appeared to focus on words she would write before she thought about a spelling strategy prior to writing her story. She did not appear to focus on the word *spell* in the question, rather focused on what words she would create for the story. It was observed that Karen would often say, “I wanna spell _____, but don’t know how to spell that word” and then attempt to spell the word, usually incorrectly. It must be noted that Karen focused on one of those two themes for 20 out of the 21 possible responses to interview Question #4 during the course of the study.

Table 13

Overall frequencies for answers to Question #4 from Karen after a written story generation task.

What is the first thing you think about when you are ready to spell a word for a story?	September	October	November	December	January	February	<i>n</i>
“Choosing the picture”	1	0	0	0	0	0	1
“How do we spell that?”	0	1	0	0	0	0	1
“What would I write – how do I spell a word?”	0	1	1	0	0	0	2
“What word can I spell”	0	1	1	1	3	4	10
“Which word was I gonna spell first?”	0	0	1	0	0	0	1
“What was I gonna write?”	0	0	2	2	1	1	6
Total	1	3	5	3	4	5	20

Activity Based Interview for Edward After Performing a Written Story Generation Task

Table 14 displays Edward’s answers to Question #4 of the Activity Based Interview after a story generation task. Edward appeared to answer how he was feeling about the whole process as well as how he felt about himself. He expressed his emotions in answer to this question. He was happy some of the time with three responses, smart or intelligent for six responses, and finally for the last four sessions of the study, he thought about “nothing.” Even when prompted for additional information, Edward still said, “nothing.”

Table 14

Overall frequencies for answers to Question #4 from Edward after a written story

generation task.

What is the first thing you think about when you are ready to spell a word for a story?	September	October	November	December	January	February	<i>n</i>
“Happy, I looked at the picture and wrote the sentence”	1	0	0	0	0	0	1
“It looks like they’re trying to skate or maybe their moms know each other”	0	1	0	0	0	0	1
“Happy because....”	0	2	1	0	0	0	3
“What would I write about?”	0	0	1	0	0	0	1
“Like it was plan, I remember”	0	0	1	0	0	0	1
“Smart because...”	0	0	1	1	2	0	4
“Intelligent because....”	0	0	0	2	0	0	2
“I’m having a good day today”	0	0	0	0	1	0	1
“Funny....because”	0	0	0	0	1	0	1
“Nothing”	0	0	0	0	0	4	4
Total	1	3	4	3	4	4	19

Research Question#3

What types of strategies do second grade students with learning disabilities use when writing a spelling list?

In order to answer this question, two interview questions were designed to identify the strategies that students use when attempting to spell words during written spelling tasks. Those questions are identified below.

Question #3: If a teacher asks you to correct a misspelled word, what do you do to spell it correctly?

Question #4: What is the first thing you think about when you are ready to spell a word for a spelling list?

Each interview question will be addressed separately for Karen and Edward as well as the context in which it occurred, such as in this case, during a spelling list task. The responses to Question #3 and Question #4 are displayed in Tables 15-18 that cover the months from September through March of the study.

Activity Based Interview for Karen After Performing a Written Spelling List Task

Table 15 presents the responses to Question #3 after Karen had completed a written spelling task of ten dictated words. The majority response to Question #4 for Karen was “Erase it and.....” She stated that answer 13 times out of 20 responses. There were a number of additional responses to that answer after “Erase it” such as “sound it out, keep trying, I looked at it and it wasn’t spelled correctly, write it again and think the word, try it again.” Her primary thought was that you must first “Erase it” which I am sure that she has heard all of her teachers say.

Table 15

Overall frequencies for answers to Question #3 from Karen after a written spelling list task.

If a teacher asks you to correct a misspelled word, what would you do to spell it correctly?	September	October	November	December	January	February	March	<i>n</i>
"Erase it and"	1	3	3	2	2	1	1	13
The teacher writes it differently	0	0	1	0	0	0	0	1
"Take that off – e"	0	0	1	0	0	0	0	1
"Try it again"	0	0	0	0	1	0	0	1
No oral response, just starts writing	0	0	0	0	1	1	0	2
"Write it at the end of the paper"	0	0	0	0	0	2	0	2
Total	1	3	5	2	4	4	1	20

Activity Based Interview for Edward After Performing a Written Spelling List Task for Question #3

Table 16 below details Edward's responses to interview Question #3 after writing responses to ten dictated spelling words. The dominant response to this question was, "Sound it out." Edward responded eight times out of 20 with that answer. Seven out of eight of these responses were during the first three months of the study. After that, there were ten other responses to this question which indicated that Edward did not have a

consistent response or strategy to correct a word when it was incorrect (i.e. “Ask a friend, Look at the Wheel of Words”). Often, the response to “Sound it out” was not a correct strategy for him to use with a word that was not a “sound out” friendly word such as *friend* or *about* where he needed to know the correct spelling from memory or know the rule when to apply two vowel sounds together. Four of his responses did pertain to a visual approach when he said that he needed to add another letter or his response of “look at it.”

Table 16

Overall frequencies for answers to Question #3 from Edward after a written spelling list task.

If a teacher asks you to correct a misspelled word, what do you do to spell it correctly?	September	October	November	December	January	February	March	<i>n</i>
"Sound it out and..."	1	2	4	0	0	1	0	8
"The <i>c</i> changes to an <i>s</i> "	0	0	1	0	0	0	0	1
Writes without an oral response	0	0	0	1	0	0	0	1
"Change the <i>u</i> to an <i>a</i> "	0	0	0	1	0	0	0	1
"Put an <i>i</i> in it"	0	0	0	0	1	0	0	1
"Ask a friend"	0	0	0	0	1	1	0	2
"I don't know"	0	0	0	0	1	0	0	1
"Put an <i>e</i> at the end"	0	0	0	0	1	0	0	1
"Add a letter (or something)"	0	0	0	0	0	2	0	2
"Ask another teacher"	0	0	0	0	0	0	1	1
"Look at it and sound it out"	0	1	0	0	0	0	0	1
Total	1	3	5	2	4	4	1	20

Activity Based Interview for Question #4 for Karen After Performing a Written Spelling List Task

Table 17 below presents the responses Karen made to Question #4 after she had written answers to ten dictated spelling words. Karen responded 10 times with “How to spell words.” Ten out of 20 responses, in other words, she was thinking about how to spell the word when beginning to write words for a spelling list. The other 50% of the time she thought about what words she would write as well as what she would spell first instead of reporting specific strategies she might use to figure out how to spell the word (i.e. “It started with an *r* or Choosing the pictures.”)

Table 17

Overall frequencies for answers to Question #4 from Karen after a written spelling list task.

What is the first thing you think about when you are ready to spell a word for a spelling list?	September	October	November	December	January	February	March	<i>n</i>
"Put a capital"	1	0	0	0	0	0	0	1
"I thought about writing"	0	1	0	0	0	0	0	1
"It started with an <i>r</i> "	0	1	0	0	0	0	0	1
"I thought of baked"	0	1	0	0	0	0	0	1
"What the word was"	0	0	1	0	0	0	0	1
"How to spell words"	0	0	4	1	2	2	1	10
"What was I gonna spell first"	0	0	0	1	1	0	0	2
"Which way was I gonna spell"	0	0	1	0	0	0	0	1
"What words are we spelling?"	0	0	0	0	2	0	0	2
Total	1	3	6	2	5	2	1	20

Activity Based Interview for Question #4 for Edward After Performing a Written Spelling List Task

Table 18 details Edward's responses to Question #4 after writing a list of ten spelling words from dictation. The dominant response was that Edward felt "happy." He responded that way seven out of 20 times. When prompted about being happy, he responded with various explanations such as: "I'm having a good day, cause it's Christmas, cause it's my cousin's birthday." His answers appeared to not be related to spelling words, but how he was feeling that day or what he was thinking about at the moment. The answer of the month in February was, "nothing" which was also a concern that he either could not report what he was feeling or that the feeling had nothing to do with spelling of the words.

Table 18

Overall frequencies for answers to Question #4 from Edward after a written spelling list

What is the first thing you think about when you are ready to spell a word for a spelling list?	September	October	November	December	January	February	March	<i>n</i>
“Outside”	1	0	0	0	0	0	0	1
“I spelled it in my mind, then wrote it”	0	1	0	0	0	0	0	1
“Words”	0	1	0	0	0	0	0	1
“Happy, because...”	0	1	1	2	2	0	1	7
“Smart, smarter than anyone, smarter than a dog”	0	0	3	0	1	0	0	4
Shrugs shoulders	0	0	1	0	0	0	0	1
“Sad, my grandma’s dog died”	0	0	0	0	1	0	0	1
“Nothing”	0	0	0	0	0	4	0	4
Total	1	3	5	2	4	4	1	20

Implemented Spelling Strategies

Coding of Strategies

The number and types of strategies based on Karen and Edward’s responses were divided into categories based upon the work of Darch et al. (2000). They included four categories in their study of second grade students’ spelling strategy use after gathering

data on metacognitive responses. Those categories, were also utilized in this study and explained below in Table 19. The categories as well as the characteristics utilized to code each response from Karen and Edward, are listed.

Table 19

Spelling Strategy Categories
(Darch, Kim, Johnson & James, 2000)

Strategies	Examples of Students' Comments
<u>Rule-based</u> Comments made that referenced appropriate rule-based strategies.	"I thought of the letter in the word and spell it." "If you don't know the word, you sound it out."
<u>Multiple</u> Comments made indicating the use of more than one strategy during spelling.	"I tried to look for other words like the one I thought hard."
<u>Resource-based</u> Indications of the use of prior learning experience.	"I would get a piece of paper, and ask teacher to write down the word I didn't know."
<u>Brute Force</u> Reports of less sophisticated procedures and recall information. These methods indicate tenacity rather than the use of systematic strategies.	"I keep on trying. I keep thinking about the word. Sometimes I guess if I don't know." I just spelled it and did the best I could."

Karen and Edward's Strategy Categories

Tables 20 and 21 will present the number of different spelling strategy categories that Karen and Edward used during the course of the study. Table 20 will chronicle the frequency of each strategy count for Karen and Table 21 will detail the frequency count of each strategy for Edward.

Karen's Spelling Strategy Category Use

Table 20 presents Karen's strategy frequency count from September through March of her second grade year during the course of the study. The counts were based on her responses to the interview Question #2, "How did you decide if that word was spelled correctly or not?" They were then coded to fit into one of the four categories presented in Table 19. This was accomplished in order to determine what type of spelling strategy Karen used when she was trying to decide if she spelled a word correctly. Karen mostly used Brute Force to solve her spelling issues, as noted in Table 20. She used Brute Force in 48 out of 73 instances. She did not use a consistent strategy (Sound it out) but responded to the questions with answers such as: "Because I write it every day," or "I don't know, Looked at it and it didn't look right." Karen had no clear strategy use that was efficient for helping her correct spelling words that were spelled incorrectly.

Table 20

Overall frequency counts for the use of Spelling Strategies based on Question #2 interview responses for both a story generation task and a written spelling list.

Strategy	Spelling List	Story	Totals
Rule-Based	10	5	15
Multiple	2	3	5
Resource-Based	1	4	5
Brute Force	22	26	48

Edward's Spelling Strategy Category Use

The frequency of Edward's spelling strategy use in response to the interview Question #2, "How did you decide if that word was spelled correctly or not?" during the

course of this study from September through March of his second grade year is presented in Table 21. Edward's majority response to this question was the use of Rule-Based Strategies. Out of 75 possible responses, he responded with 47 Rule-Based strategy answers. Edward's dominant response to this question was, "Sound it Out." Very often this strategy worked for him; often it was an inappropriate strategy for the spelling of a word that did not lend itself to the process of sounding it out in order to spell it. Even though Edward did have a strategy that he employed over half of the time, his use of different strategies was not flexible enough or varied for each situation.

Table 21

Overall frequency counts for the use of Spelling Strategies based on Question #2 interview responses for both a story generation task and a written spelling list.

Strategy	Spelling List	Story	Totals
Rule-Based	31	16	47
Multiple	3	4	7
Resource-Based	4	3	7
Brute Force	0	14	14

Intercoder Agreement for Coding Spelling Strategies

The researcher and a Reading professor, met twice during the study once in January and once in April, to determine if the data that were being gathered were coded at a certain level of agreement as to the types of responses that the students in the study were using. The importance of coding is for "data reduction" so that the data are more manageable and in order to be interpreted. (Graue & Walsh, 1998, p.164). The researcher and the advisor both coded the data responses separately and then compared

outcomes. The agreement for the coding of the data was that Karen indeed used Brute Force as her primary spelling strategy whereas Edward used a Rule-Based Strategy for helping him solve his spelling issues.

Summary

Analysis of the data collected for Karen and Edward indicated that they both used different spelling and metacognitive strategies to solve their spelling challenges.

Karen's primary strategy use was Brute Force to help her determine if she spelled a word correctly as well as how she could ultimately correct the spelling of a word that the teacher said she had misspelled. In other words, she did not have a specific strategy but tried to identify and fix her words in various ways, mainly by trying this or that to get the correct answer. She did not report her strategy accurately, often saying she used a Rule-Based strategy, when in fact it did not work for her in correcting her spelling error.

Edward predominately used a Rule-Based strategy, sounding it out; however, it was not efficient for him as the strategy did not work in every instance to correct a misspelled word. He often ended his response to a question with a question which indicated he was guessing about what strategy to use. His answers indicated that he did not think about spelling a word before writing it by answering the question, "What do you think about before spelling a word?" he would reply, "happy or smart" for the majority of his answers.

The findings in this study give insight into the metacognitive functions of monitoring and regulating of two second grade students with a learning disability while performing written spelling tasks. There was no commonality in their strategy use as one preferred a Rule-Based approach and the other used Brute Force even though they are

instructed by the same general education teacher and special education teacher for reading and writing instruction. However, in terms of metacognitive strategy use, the commonality evidenced in the responses by the students is that they are both in the emerging stage of using self-monitoring and self-regulation in their spelling development. Since this is a Qualitative Case Study, the discussion and implications of the findings will be described separately for each student in Chapter 5.

CHAPTER 5

Overview, Conclusions and Recommendations

“Students who have learned some strategies may rely too heavily on a particular strategy and use it on every occasion rather than evaluating whether or not the strategy is appropriate for the task.” (Wery & Nietfeld, 2010)

Overview

This study investigated the spelling strategy use of two students with learning disabilities in second grade while they performed written spelling tasks; specifically, whether they could report their spelling strategy use and if so, what spelling strategies they used. Interviews following the students completing a written spelling list and a story generation task were conducted over a seven-month period during the school year from August through March. Observation of the students in their general education classroom continued April and May of the school year.

The focus of this study was to investigate whether students with learning disabilities over time, use metacognitive strategies and if so, what type of strategies they use while spelling. With this information, the goal of this study was to contribute to the body of information about what students with learning disabilities do and think before

performing a written spelling task, as well as how they reflect on that knowledge through an interview process after the spelling task is completed.

The literature that was reviewed for this study focused on six areas: metacognition, metacognition and spelling; good spellers and poor spellers; metacognition and learning disabilities, spelling and learning disabilities and spelling, learning disabilities, and metacognition. Much of the literature researched focused on metacognition and reading and was sparse in the area of learning disabilities, spelling and metacognition which was the main focus of this study.

Since this was a qualitative case study, much of the learning and social environments was explored and observed during the course of the study. Those environments have been described for the purposes of how they relate to Karen and Edward's learning in both the special education, as well as the general education classrooms. This description of the environments included the special education and general education teachers, their classmates and the program used to instruct them in reading and writing where their learning disabilities cause them difficulties.

Two interview protocols: Pre-Spelling Interview (Appendix A) and Activity-Based Interview (Appendix B) were developed based upon the Darch et al. (2000) study and expanded to fit the needs of this study. These instruments were piloted with second grade students with learning disabilities in another school system over a two-month time period. The results of that pilot study suggested that the interview questions, in fact, addressed the research questions of this study. The questions were then used during the course of this research study to help provide the students with a structured format whereby they could explain how they perceived themselves as second grade spellers.

They also had the opportunity to explain what strategies they used after they had finished a spelling list or a story generation task. The activity based interviews are the basis for answering the three research questions posed in this study.

The research environments included the special education as well as the general education classrooms. The interview portion of the study was conducted in the special education classroom twice weekly when they concluded their sessions with their special education teacher. Two months were spent working with the students in the general education classroom, both observing them and assisting them during their reading block time.

Study Conclusions

The research questions provided a framework for the design and implementation of this study. In order to answer these questions, an interview protocol was developed that would allow Karen and Edward to answer each question. Conclusions for each research question listed below are provided:

1. Are second grade children with learning disabilities able to reflect and report the strategies they use during written spelling tasks?
2. What types of strategies do second grade children with learning disabilities use when spelling words while writing a story?
3. What types of strategies do second grade children with learning disabilities use when writing a spelling list?

Research Question #1

The first question asked whether students could reflect on the strategies they used when spelling words as well as report the strategies they used during written spelling tasks. The interview questions created for this study (Appendix B) helped the students retrieve the information about their strategy use. It is possible to imagine that a second

grade student, particularly one with a learning disability, would be unable to reflect on strategy use and report what it is that they utilized. However, Kuhn (2000) and Baker (2005) both believed that children as young as three and four years old can use metacognition under structured conditions. The structured conditions in this study were the weekly use of a ten word spelling list that was taken from their second grade classroom spelling list, as well as a story they generated based upon a photograph that they chose. After each task was completed, they were asked questions related to their knowledge of spelling words correctly, fixing misspelled words, and reporting those instances.

Metacognitive Reflection

Karen and Edward showed that self-reflection was an emerging concept for each of them. Interview Question #1 addressed this aspect when it asked, “Were there any words you had trouble spelling?” Karen’s responses were negative for 31 out of 39 responses. Edward answered “no” for 22 out of 39 responses. The reality was that they did not spell the majority of words correctly either during their spelling list or during their story generation. It is interesting to note, that for the most part, Karen and Edward did not perceive that they had any problems with spelling the words either dictated from a spelling list or for the self-generated story.

In reference to their emerging self-reflection, they correctly stated a few times that they did have trouble spelling a word; 8 out of 39 responses for Karen and 17 out of 39 responses for Edward. It was encouraging to note that they did have a small sense that something was not right with the spelling and reported that to the researcher when they had a chance to reflect on their spellings in their written work. They were aware of the

idea that a word may have not been spelled correctly (“Yeah, shoe, tying and No, uh yeah, hopscotch”), but the majority of their reflections indicated they did not have knowledge about correct or incorrect words that they had spelled. They quickly gave answers and appeared not to spend too much time in reflection of their completed work either during the writing or during the interview portion. Students with learning disabilities are “often not aware of what they do not know” and tend to be more passive in their ownership of engaging in the learning activity (Wery & Nietfeld, 2010, p.70). Much of the interview responses indicated that Edward and Karen did not reflect on what they wrote or whether what they wrote was correct or incorrect.

Metacognitive Reporting

The second half of Research Question# 1 explored whether a second grade student with learning disabilities could report his or her strategy use while performing written spelling tasks. In order to answer that question, Interview Question #2 was used to prompt responses after their written spelling tasks. The question, “How did you decide if that word was spelled correctly or not?” was created to determine whether Karen and Edward could report what strategy they used to check whether the word was spelled correctly or not.

For reporting their strategy use, Karen and Edward’s responses were very different. Karen reported that she either, “sounded it out” for 7 out of 39 response, “I don’t know” for 14 out of 39 responses, or explained a rule for 8 out of 39 responses. While observing Karen writing a spelling list from dictation as well as when she generated her own words for a story, she did sound out each word that she wrote. When it was not an audible phonemic sequence, it could be observed by her mouthing the sounds

in the words. Even though she reported that she only “sounded it out” for 7 out of 39 responses, she used that method the majority of the time the researcher observed her spelling generation. It is evident that she did use a strategy consistently, but did not report it consistently. During the observations of the general education classroom as well as the special education classroom, Karen and Edward were both exposed to a phonetic approach to reading and writing. This was a decoding and writing strategy that the students were taught to employ as the first line of trying to decode a word or write a word. She was using the strategy that was being reinforced. However, the word study approach was also being reinforced in the classroom. Students were instructed to look at word roots, word similarities, and word families in order to “increase specific knowledge of words – the spelling and meaning of words” which reflects the general nature of our spelling system in both classrooms (Bear, Invernizzi, Templeton & Johnston, 2004, p. 4).

For Edward, the strategy use he reported most often was “sounded it out” for 24 out of 39 responses. This strategy use was consistent with what was taught in the general education classroom as well as during special education during reading and writing blocks. Unfortunately for Edward, it was the only strategy he employed, thus causing him difficulties when there was a word he needed to spell that could not be “sounded out.” His lack of a variety of strategies caused difficulty when venturing to unknown spelling words.

For Karen, her use of Brute Force strategy the majority of the time was consistent with the Darch et al. (2000) study that found their second grade students with learning disabilities failed to use a variety of strategies for spelling tasks and the strategies they used were often employed unsuccessfully.

Research Question #2

The second question addressed the types of spelling strategies second grade students with learning disabilities use when spelling while writing a story. Interview question #3 was created to help answer that question. Question #3 states: If a teacher asks you to correct a misspelled word, what do you do to spell it correctly? Here Karen and Edward were required to report a strategy that they used when they needed to correct a word. They were given the opportunity to report their strategy; if they struggled with an answer, a prompt was given such as, What if this word was spelled incorrectly, how would you change it?" I would point to one of the words in their story and they would often work to correct it right away or sometimes just respond with an answer. Karen reported that she utilized a variety of strategies. "Erase it" was reported 5 out of 21 times and a rule-based strategy was reported 4 out of 21 times. During a story generation task the students had the opportunity to choose words they already knew how to spell; however, Karen and Edward both chose words they did not know how to spell and spelled them incorrectly most of the time, other than simple sight words such as: *a, an, the, this, that*.

Edward did not continue to use the strategy of "sound it out" but 2 out of 21 times. The sound it out strategy he reportedly used to determine if a word was spelled correctly or not was not implemented during his attempts to correct a misspelled word. He would just begin to write to change a word 8 out of 21 responses. He also reported that he would take something away (a letter) 4 out of 21 responses.

In reality, when Edward and Karen did employ the strategy they reported, it often did not result in the correct spelling. Often it was observed that they would “fix” a word by “brute force,” not reporting a strategy, just working to change letters in the word.

Interview Question #4

This question, “What is the first thing you think about when you are ready to spell a word for a story?” was designed to address Research Question #2. When children are spelling a word, what strategies do they use during a story generation task? The purpose of the interview question was to elicit from Karen and Edward, what it was they were thinking about when they were spelling words for a story, and prompt them to report what cognitive processes they were using in relation to how they were going to spell words for their story.

Karen appeared to understand the question as her answers addressed her concerns about “What word can I spell?” for 12 out of 20 responses as well as “What was I gonna write?” for 6 out of 20 responses. Even though she was allowed to pick the words for the story she was writing, she still reported that she was thinking about spelling and writing the words for her story. I expected to hear Karen and Edward state that they were thinking about spelling rules or sounding out the words, and their responses surprised me, especially Edward’s.

Edward appeared to be confused by the question in each instance. Even when prompted to think about the words he was spelling, he still answered the majority of his responses as to how he was feeling about his situation that day. He replied: “nothing” for 4 out of 19 responses. He was feeling “smart” 4 out of 19, “happy” 3 out of 19 and “funny” 1 out of 19 responses. Edward appeared to queue in on what he was thinking

about the session, the day, or how he was feeling about himself. He often would expand on his thoughts after his response. I would say, “Why do you feel smart?” He would respond, “Because I’m smarter than a dog,” or “Smarter than my mom.” Or I would say, “You can’t think of anything?” after his response; “nothing.” he would say, “just nothing.” I expected a deeper level of reflection from Edward about his spelling words because he was very attentive and involved with the work, but he was not able to produce that level of reflection about his spelling task. Or, if he did reflect internally, he was not able to report it externally.

Children may be thinking one thing and report another. Paris and Flukes (2005) stated that children’s reporting of their cognitive processes are not always accurate. Reports may also appear more sophisticated than they actually use because they want to please the examiner. Both Edward and Karen answered this interview question very quickly each session. It appeared that the answer was impulsive rather than a thoughtful reflection about their spelling processes. Growth was not observed over time in this regard, as they gave a rote answer of “nothing” or “what word was I gonna spell” during the last weeks of the study.

Research Question #3

This question was developed to learn about strategies second grade students with learning disabilities use when writing from a dictated spelling list. This question differs from Research Question #2 in that it is a task based on a dictated spelling list rather than generating a story based upon a chosen photograph. I wanted to investigate whether there were differences in their thinking about strategies when performing a self-generated story or a dictated spelling list.

Interview Questions #3 and #4 were designed to help structure a response for Karen and Edward about which strategies they used when spelling and what they were thinking about when writing words for a spelling list.

Interview Question #3

After being given ten words for a dictated spelling task, Karen and Edward were asked, “If a teacher asks you to correct a misspelled word, what do you do to spell it correctly?” Karen’s dominant answer was “erase it” for 13 out of 20 responses. The response to this question confused me until I listened to the first step in a sequence of what you do in the classroom when a word is spelled incorrectly, the teacher said, “Erase it.” When I would follow up with a prompt for elaboration, she would say, “write it again, sound it out, because I looked at it.” These additional prompts helped clarify what Karen was thinking. However, “erase it” is not a strategy, but the beginning step of what the process is for correcting a word. Paris and Flukes (2005) stated that interviews can test whether or not students are gaining information from classroom instruction. This is what Karen demonstrated, she listened to her general education and special education teacher give instructions for the first step in correcting a word; however, she missed the next step in the sequence for correcting her words.

Edward reported more of a variety of strategies in response to Interview Question #3 than Karen. He said he would, “sound it out” for 8 out of 20 responses, “ask a friend or a teacher” for 3 out of 20 responses and “change a letter” for 6 out of 20 responses. He did use much more of a variety of strategies than Karen in relation to the task. He was more flexible in what the word needed in terms of correction. He was also more

thoughtful in his response to this question and took his time to answer; however, when prompted for more elaboration, he restated his original response.

Interview Question #4

This question was created to help structure what Karen and Edward were thinking about when they were ready to spell words for a dictated spelling list. It was hoped that this question would give insight into what metacognitive processes Karen and Edward were using when getting ready to spell words, whether they were planning what they would do, or what strategy they would use. Karen's responses focused mostly on how she was going to spell a word for 10 out of 20 responses. The next highest response number was "What was I going to spell" as well as "What we are spelling" for 4 out of 20 responses. Her thoughts were mostly about the words she was going to spell rather than thinking of a strategy or the planning of the use of a spelling strategy. Unlike the story generation task where she knew what words she was going to choose to spell, this dictation task left her not knowing what words she was going to spell until she heard them one at a time.

Edward appeared to be confused by the question. When asked what he was thinking about, he answered according to how he was feeling. "Happy" 7 out of 20 responses, "smart" 4 out of 20, responses and "nothing" 4 out of 20 responses. It was noted that during the last month of the study, he no longer expressed emotion; he said he was thinking about "nothing." When prompted for elaboration, the answer was still "nothing" or "just nothing."

Metacognitive Awareness

Metacognitive awareness involves both the processes of thinking about understanding of a situation and then self-regulating that understanding and knowledge to put it to action, as well as knowing when and why (Schreiber, 1980). Both Karen and Edward found themselves at the emerging levels of metacognition based upon the above definition. They, at times, could report the strategy that they used; however, the strategy was not always accurate and did not help them problem solve to obtain the correct spelling. They were aware at times, or self-monitored, whether their answers were correct or not. For the most part, unless probed, they both thought that what they had written was correct and were surprised that even though they would read it back to me that it was spelled incorrectly. They read the word the way they meant it for the story or the way it was dictated, not the way that they had spelled it. Their self-monitoring skills were still at the early stages of development. Good spellers are able to look at a word and decide if it is correct or incorrect (Kreiner & Green, 2000). When attempting to self-regulate or correct a misspelled word, they often employed an incorrect strategy or wrote and rewrote the word until they thought it was correct, occasionally it was by “brute force.” At times they could not report their strategy planning; they just erased the word and started over again, often when only one letter needed to be added or deleted.

Kreiner and Green (2000) reported that a good speller would avoid words he or she did not know, but those whose self-monitoring skills are deficient will spell a word and think it is correct. This was seen during the story generation task where Karen and Edward would use words they did not know how to spell. They would write them and

think they were spelled correctly. Only when I pointed one out as a possible error did they attempt to revise it.

Vaidya (1999) pointed out that students with learning disabilities are often deficient in strategy knowledge and use and must be taught those strategies explicitly. However, even with explicit instruction, many students with learning disabilities have deficits with organization and memory skills which may keep them from recalling at all, or recalling them correctly (Vaidya, 1999). Such is the case with Karen and Edward. They had ideas of strategies that they recalled, however, they were not able to use them successfully in every spelling situation, even though the dictated spelling lists were words they had already been exposed to during general education and special education instruction. They were only able to recite part of a rule (i.e. “There is an *e* in party,” or “Because you stop the *p* from making the *e* say *o*’s name.”) As often is the case with children with learning disabilities, Karen and Edward struggled to maintain attention in the general education classroom (Lerner & Kline, 2006). For the last two months of this study, I had been assisting them during language arts time in the general education classroom one day a week. Even with my sitting next to them, Karen and Edward still struggled with attending to the teacher’s instructions in front of the room and following the directions she was giving. Karen and Edward were both playing with items in their desk, sharpening a pencil or talking to a friend. They both typically missed the directions and did not understand what they were supposed to do when the teacher was providing instruction. Left on their own to complete a worksheet, they both had difficulty getting started because they did not retain the directions and appeared to be overwhelmed with starting the task.

Spelling Strategy Use

For the purpose of this study the Darch et al. (2000) spelling strategy categories were used to determine what Karen and Edward were doing while they were attempting to spell words for a spelling list or a self-generated story. Darch et al. (2000) devised a set of spelling strategies that the students in their study used to spell words. These categories had been adopted for this study. Their categories for spelling strategies are again listed below.

Table 22

Spelling Strategy Categories (Darch, Kim, Johnson & James, 2000)

Strategies	Examples of Students' Comments
<u>Rule-based</u> Comments made that referenced appropriate rule-based strategies.	"I thought of the letter in the word and spell it." "If you don't know the word, you sound it out."
<u>Multiple</u> Comments made indicating the use of more than one strategy during spelling.	"I tried to look for other words like the one I thought hard."
<u>Resource-based</u> Indications of the use of prior learning experience.	"I would get a piece of paper, and ask teacher to write down the word I didn't know."
<u>Brute Force</u> Reports of less sophisticated procedures and recall information. These methods indicate tenacity rather than the use of systematic strategies.	"I keep on trying. I keep thinking about the word. Sometimes I guess if I don't know." I just spelled it and did the best I could."

Once responses from Karen and Edward were obtained, they were placed into one of the above categories by this researcher as well as by a Reading professor. A process Lincoln and Guba (1985) called "peer debriefing" was employed to "systematically talk through the research" for the purpose of peer agreement when coding the responses (p.

189). In qualitative analysis, the questions of internal validity and reliability are posed with regard to the methods of collecting data, not whether the data can be replicated another time as it does within the quantitative process. However, internal validity is enhanced by the use of “1) triangulation of data, 2) member checks, 3) long term observation 4) and peer examination” (Merriam, 1998, p. 204). For this study, the triangulation of data included one-to-one interviews with the students, observation in the classroom, field notes taken during both observations and interviews as well as audio recordings of all of the interview time with Karen and Edward and then later transcribed word for word. The member checks were conducted with a Reading professor about how the study was progressing as well as whether methodology was being followed. The long-term observation of the students in their classrooms also have internal validity. Data were not just gathered a few times during the school year, but data were collected two times weekly from August through May during a second grade school year. Interview responses were examined over time, looking for patterns of behavior that could be identified for the study. Finally, peer examination of the data was conducted twice during the study to code the responses and look for the emergence of metacognitive strategy use by Karen and Edward while spelling words for the study.

The results of the strategy coding for Karen and Edward are as follows. Karen used “Brute Force” the majority of the time. She frequently worked on a word with no reported planning of how she was going to fix it. She tried different strategies that did not fit into a specified category. She did not appear to report or use strategic methods to solve her written spelling dilemmas.

On the other hand, Edward, used more “Rule-based” strategies or was able to report what it was that he was doing to fix a word. He reported “Sound it out” as his strategy even though it often was not a correct or efficient strategy, it was nonetheless a strategy he reported he was using. It was also evident during his writing sessions that he was attempting to sound words out. He did not do that audibly; however, he was seen mouthing the sounds of words with which he was having difficulty.

The Reading professor and I concurred on the above coding of strategy use by sampling a portion of the study for responses and putting them into the Darch et al. (2000) categories. This concurrence of coding would lead to conclusions about Karen not using specific strategies for spelling tasks. She used a strategy that came to mind and often it was not the correct strategy for spelling that particular word. Edward, on the other hand, used the same strategy over and over even when it did not fit the situation, rendering his strategy use inflexible and inefficient.

Recommendations for Future Research

The study corroborated the findings of Darch et al. (2000), that students with learning disabilities have difficulty in the effective use of spelling strategies. Others have suggested that even with spelling practice, students with learning disabilities do not use spelling strategies (e.g., Gerber & Hall, 1987).

Karen and Edward have not mastered a particular spelling strategy usage. Even as they often reported a strategy, it was not consistent or systematic. Their metacognitive skills were emerging as evidenced by having some awareness that a word was incorrect and reporting that they were using a strategy for spelling or correcting a word. Students with learning disabilities have difficulty knowing which strategy to use and then self-

correcting it if it was not working. As reported by Wery and Nietfeld (2010), this may be the most difficult aspect of self-regulated learning for students with exceptional needs along with not seeking help or support when they are having difficulty. Moreover, these students are also often unaware that they need help.

This findings of this study point to the need to assess the level of metacognition of students with learning disabilities in order to determine what metacognitive aspects are developed and which aspects are not at certain ages. Self-monitoring, reflecting and self-regulation are all skills that good writers are able to employ when planning for writing, when facing a problem, and when checking for accuracy.

Future research needs to look at the developmental levels of metacognition in order to determine what stages typical children pass through, so that information for children with learning disabilities can be derived from those data. Sabey (1999) stated that spelling instruction should reflect the student's current level of metacognitive spelling development and move from there so there are no gaps in skill development.

More research is needed in the assessment of metacognitive abilities for writing in the areas of monitoring and regulation in order to guide instruction for students with learning disabilities. Once additional levels of research in metacognition and learning disabilities is established, work can be done to design programs for levels of metacognitive knowledge. Additionally, students with learning disabilities need explicit and systematic instruction based upon those metacognitive deficits. Block and Peskowitz (1990) found that students are able to learn to spell accurately when they develop strategies that help them decide if a word is spelled correctly. Deciding if a word is spelled correctly is a metacognitive process called self-monitoring. Kernaghan and

Woloshyn (1995) found that children could in fact learn to monitor when taught the metacognitive information for spelling accuracy.

With what is known at this time about metacognitive development, it would be helpful to begin explicit and systematic instruction at the metacognitive developmental level for spelling in order to sequentially help students move through the acquisition of metacognition for improved self-regulation and efficiency of producing accurate and effective writing. With consistent teaching and modeling of how to employ strategies and when, students with learning disabilities should be able to learn to be independent and productive writers.

Limitations

When conducting a qualitative study of this nature, the process is holistic in terms of information that is gathered from multiple sources, such as the classroom observations of the students in those environments as well as their social environment. All of these data are recorded by the participant/observer through anecdotal notes and audio recordings, as well as one-to-one interviews. The data gathered were intended to add to the body of knowledge about what students with learning disabilities do when performing written spelling tasks. Since there were only two subjects, this information is not intended to be generalized to the population at large. The detailed descriptions give insight into the lives of two students during their second grade academic year. Their thoughts are chronicled here as a window into the metacognitive minds of two students with learning disabilities.

Another limitation might have been the events that happened in the lives of these two students during the school year. Some dramatic changes occurred that might have

affected their motivation on particular days. On the positive side, Karen who was prone to two to three temper tantrums per day stopped having them during the course of the study. Whenever the examiner missed a regularly scheduled session, the out of control behavior started again. The researcher never observed this behavior during the nine months of the study.

However, during the last two months of the study, Karen had dramatic changes in her home life. Karen was understandably upset while her mother was away from the home for an extended period of time. She did have days she seemed sad during this time and it may have affected her attention and responses.

Edward experienced similar traumas during the last two months of the study. His father and mother separated, consequently his father moved out of the home. Shortly after that, his older brother was taken from the home in the middle of the night and arrested. This incident left Edward shaken and distracted and might have affected his responses.

During the last three months of the study, their special education teacher's husband who had cancer, took a turn for the worse and passed away. The special education teacher was on medical leave when it happened and then did not return to school for the remainder of the school year. Karen and Edward had a permanent substitute for their special education pull-out sessions from March through May. They seemed a bit disoriented by this series of events and were not told why Mrs. Paul was no longer there. They eventually were told, but anticipated that Mrs. Paul would return to finish the school year with them.

Summary

Limited research is available about the metacognitive strategy use of second grade students with learning disabilities while performing written spelling tasks. In this study, two second grade students with learning disabilities were followed during their school year from August through May. The researcher was a participant/observer who spent time with the students in their general education classroom as well as their special education classroom gathering data about their strategy use. Interviews were conducted to gain a sense of what the students thought about after writing a spelling list as well as after generating a story.

Even though both students had learning disabilities, they had dissimilar strengths and weaknesses which meant the results of the study would show differences in their abilities. Both students had learning disabilities in the areas of reading, writing and spelling. Karen was a better speller, however not as good a reader. Edward, on the other hand, had poorer spelling skills but was able to read and comprehend at a higher level than Karen. Both students had emerging self-regulation strategies, however, not at the level of their typical peers in the classroom where I observed. They were able to use strategies that they were not able to report as well as reported strategies that were not effective in solving their spelling problems.

According to Bear and Templeton's (1998) six stages of developmental spelling, Karen and Edward were both at the Letter Name stage which is for ages 5-9, in early first to early third grade. Their skills placed them in the middle and late beginning stage where they begin to look at vowel patterns, spell CVC words, as well as initiate some blends and digraphs.

Their standard scores on the Test of Written Spelling -4 (TWS-4, Larsen, Hammill & Moats, 1999) which was administered to them in August, put Karen at 80 and Edward at 79. These scores when compared to an average range of 85 to 115, put them in the below average range for their age. However, a retest was conducted at the end of the study and it showed that Karen's standard score increased to 90 and Edward's increased to 87. Although this was not a treatment study, it is possible that through the continuous assessment and awareness of strategies while spelling, Karen and Edward were able to make advances in their spelling skills. More plausible is that the general education classroom environment as well as the special education classroom where word study was a major focus, would probably account for much of the improvement as they were exposed to this on a daily basis.

Karen used the Darch et al. (2000) "Brute force" method as a strategy for trying to spell words that she did not know. That categorization means that she did not use systematic spelling strategies, rather, she used whatever strategy came to mind. This was the method that Darch et al. (2000) found the four students in their study used most frequently. Karen was not able to report that she misspelled words when asked. When the researcher pointed out to her that she had misspelled a word, she tried various ways to correct the words by erasing it and then rewriting it again.

Edward on the other hand, fell into Darch et al. (2000) category of Rule-based use. He reported using strategies such as "sound it out" consistently, however to the point that even when it was not an appropriate strategy, he used it to try to spell or correct a word. Most frequently, he was not able to report that he had any difficulty spelling words

for either the spelling list or the story he wrote from a photograph. His strategy use differed from what was found in the Darch et al. (2000) study.

The information gained from Karen and Edward revealed how two students with learning disabilities use their executive functions to solve spelling issues. Metacognitive strategy use is an important factor in helping students become independent readers and writers. Knowing where a student is in their metacognitive strategy development would inform teachers about how to take students to the next level in learning how to “think about thinking” and do it correctly and efficiently.

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APPENDIX A

Pre-Spelling Interview

1. When you are writing and come to a word you don't know, what do you do? What else can you do?
2. If you knew that one of your friends was having problems with his/her spelling, what could you tell your friend that could help?
3. How do you think you learned to spell?
4. Are you a good speller?
5. What would you like to be able to do better as a speller?
6. When did you first learn how to spell words?
7. Do you think some kids have trouble with spelling?
8. How do you feel if you can't spell words when you are writing?
9. Tell me how your teachers teach you to spell.

APPENDIX B

Activity Based Interview

1. Were there any words you had trouble spelling?
2. How did you decide if that word was spelled correctly or not?
3. If a teacher asks you to correct a misspelled word, what do you do to spell it correctly?
4. What is the first thing you think about when you are ready to spell a word for a spelling test? For a story?

APPENDIX C

Prompting Questions

1. Are you having trouble spelling the word?
2. What can you do to help yourself spell the word?
3. Can you try it again?
4. Can you think of anything else?
5. Are you finished?

APPENDIX D

**Marion Community Schools***Raising the bar of excellence in education***M E M O**

Department of Special Services

Dr. June Robinson

TO: Rhonda Kraai, Taylor University IRB
FROM: Dr. June Robinson
DATE: July 15, 2009

To Whom It May Concern:

Marion Community Schools Department of Special Services grants permission for Rhonda Kraai to use Allen Elementary School as the setting for her dissertation study, "The Role of Metacognitive Strategy Use in Second Grade Students with Learning Disabilities during a Written Spelling Task." She will be able to work with 2 students identified as having a learning disability in second grade once parental approval has been received.

Dr. Studebaker, Mr. Biddle and I are excited to have an opportunity to assist Mrs. Kraai as well as contribute to research that will improve instruction for our students.

Please feel free to contact me if you have any further questions.

June Robinson *June M. Robinson* 7/20/09

June M. Robinson, Ed.D.
Director of Special Services
765-662-2546 x139

CC: Kevin Biddle, Principal Kendall Elem.
Dr. Ginger Studebaker, Interim Superintendent

APPENDIX E

Parent Informed Consent

Dear Parent/Guardian:

Your child is eligible to participate in a research project called, “The Role of Metacognitive Strategy Use in Second Grade Students With Learning Disabilities During a Written Spelling Task.” The purpose of the project is to help understand if children in second grade use metacognitive strategies (or what students do to help them to think about a word, check it and evaluate it for correctness) to assist them while spelling words during writing tasks. During this fall semester of the school year, the researcher, a former special education teacher, will observe your child’s general education classroom room as well as special education classroom approximately four times. After the four observations are completed, the researcher will interview your child while he or she is writing spelling words as well as writing a story based upon a photograph. Then the researcher will ask your child about how he or she spelled the words. The interviews will be conducted in the special education resource room when your student is assigned there. The time commitment for the student is minimal. The interviews should take about 10 minutes of your child’s time once to two times weekly. The interviews will be audio recorded and your child’s name will be changed for purposes of transcribing the interview by a research assistant. All data from these sessions will be locked in the researcher’s home office where it will be stored indefinitely.

The risks or discomforts from participating in the study are minimal. He or she may feel initially anxious working with an unknown adult while writing and answering questions about their writing, however your child will be assured that their answers do not affect their classroom grades. Should that situation occur, a school social worker would be available to speak with your child to help reassure him or her. Your child will not be penalized should he or she decide not to participate in the study. You are free to withdraw your child from the study at any time. Your child is also able to withdraw himself/herself from the study if he or she so chooses. One benefit from participation in the study is that your child may gain an understanding of the process he or she uses when attempting to spell words for spelling lists as well as when writing a story.

Feel free to contact the researcher if you have questions before agreeing to participation in the study. Also, please discuss this form with your child and have him or her sign it if they would like to participate in the study. Once both of you have signed this form, please return it to your child’s teacher.

For one’s rights as a research subject, contact: Research Compliance, Sponsored Programs Office, Ball State University, Muncie, IN 47306, (765) 285-5070, irb@bsu.edu.

I, _____ (print your name) give permission for my child,
 _____ (print first and last name), to participate in this research
 project entitled, “The Role of Metacognitive Strategy Use in Second Grade Students with
 Learning Disabilities During Written Spelling Tasks.” I have read the description of this

project and give my child permission to participate. I understand that I will receive a copy of this Permission form to keep for future reference.

Parent/Guardian Signature

Date

I, _____ (print your name), would like to participate in this research project. My parent/guardian has discussed this project with me and I give my consent to participate.

Student's Signature

Date

Investigator
Rhonda V. Kraai, Graduate Student
Special Education
Ball State University
Muncie, IN 47306
Telephone: (765) 661-9895
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Faculty Supervisor
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APPENDIX F

National Institutes of Health Certificate of Completion



APPENDIX G

Institutional Review Board Approval Letter



Institutional Review Board

DATE: July 29, 2009

TO: Rhonda Kraai, M.S.

FROM: Ball State University IRB

RE: IRB protocol # 124976-2

TITLE: The Role of Metacognitive Strategy Use in Second Grade Students with Learning Disabilities During Written Spelling Task

SUBMISSION TYPE: Revision

ACTION: APPROVED

DECISION DATE: July 29, 2009

EXPIRATION DATE: July 28, 2010

REVIEW TYPE: Expedited Review

The Institutional Review Board has approved your Revision for the above protocol, effective July 29, 2009 through July 28, 2010. All research under this protocol must be conducted in accordance with the approved submission.

As a reminder, it is the responsibility of the P.I. and/or faculty sponsor to inform the IRB in a timely manner:

- when the project is completed,
- if the project is to be continued beyond the approved end date,
- if the project is to be modified,
- if the project encounters problems, or
- if the project is discontinued.

Any of the above notifications should be addressed in writing and submitted electronically to the IRB (<http://www.bsu.edu/irb>). Please reference the IRB protocol number given above in any communication to the IRB regarding this project. Be sure to allow sufficient time for review and approval of requests for modification or continuation. If you have questions, please contact Amy Boos at (765) 285-5034 or akboos@bsu.edu.